

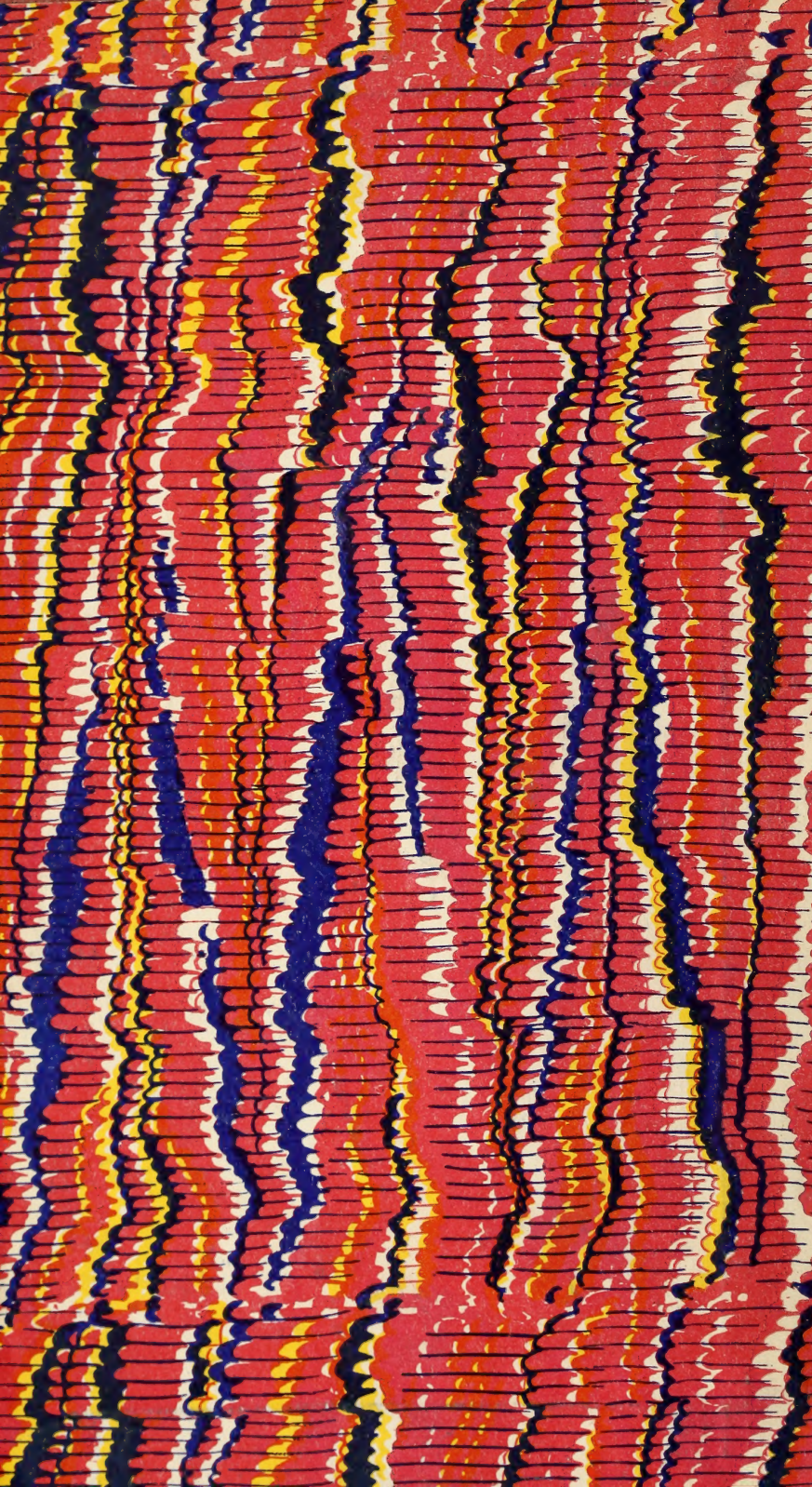






## Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

















# UNITED STATES DEPARTMENT OF AGRICULTURE



DEPARTMENT BULLETIN No. 1401



Washington, D. C.

May, 1926

## MARKETING PEANUTS

By

HAROLD J. CLAY and PAUL M. WILLIAMS, Marketing Specialists  
Bureau of Agricultural Economics

### CONTENTS

	Page
Historical Sketch . . . . .	2
Leading Varieties of Peanuts . . . . .	3
Commercial Types of Peanuts . . . . .	3
Harvesting and Curing . . . . .	4
Picking or Threshing . . . . .	5
How Production is Financed . . . . .	7
Marketing Methods . . . . .	9
Secondary Distribution . . . . .	23
Federal Market News Reports . . . . .	51
Roasted Peanuts in the Shell . . . . .	54
Peanut Products . . . . .	55
Peanuts as a Feed for Hogs . . . . .	76
Imports and Exports . . . . .	77
Suggestions . . . . .	85
Summary . . . . .	86
Statistical Information . . . . .	87
Publications Relating to Peanuts and Peanut Products . . . . .	98

---

WASHINGTON  
GOVERNMENT PRINTING OFFICE

1926





# UNITED STATES DEPARTMENT OF AGRICULTURE



## DEPARTMENT BULLETIN No. 1401



Washington, D. C.

May, 1926

### MARKETING PEANUTS<sup>1</sup>

By HAROLD J. CLAY and PAUL M. WILLIAMS, *Marketing Specialists, Bureau of Agricultural Economics*

#### CONTENTS

	Page		Page
Historical sketch.....	12	Secondary distribution—Continued.....	
Leading varieties of peanuts.....	3	Special methods of distribution.....	48
Less important varieties.....	3	The geographical distribution of peanuts.....	50
Commercial types of peanuts.....	3	Character of receipts in principal mar-	
Harvesting and curing.....	4	kets.....	50
Picking or threshing.....	5	Federal market news reports.....	51
How production is financed.....	7	Price quotations.....	52
Virginia-North Carolina section.....	7	Reports of movement.....	52
Georgia and Alabama.....	8	Imports and exports.....	54
Texas.....	9	Crop production statistics.....	54
Marketing methods.....	9	Roasted peanuts in the shell.....	54
Methods of marketing farmers' stock		Peanut products.....	55
peanuts.....	10	Salted peanuts.....	55
Warehousing.....	12	Peanut butter.....	61
Grades for farmers' stock peanuts.....	14	Peanut candy.....	65
Importance of large size.....	19	Bakery products.....	68
Farmers' cooperative organizations.....	20	Peanut oil.....	68
Secondary distribution.....	23	Peanut cake and peanut meal.....	73
Operation of cleaning and shelling plants		Peanut flour.....	75
.....	23	Peanut hulls.....	75
Grades for Virginia-type peanuts.....	30	Other by-products.....	76
Federal grades for Spanish and Runner		Peanuts as a feed for hogs.....	76
types of peanuts.....	33	Imports and exports.....	77
Federal inspection of shelled Spanish and		Asiatic peanuts, imports.....	78
Runner peanuts.....	35	Imports from Spain.....	84
Settlement of disputes.....	37	Other sources of supply.....	84
Methods of disposing of shelled and		Foreign outlets for American peanuts.....	84
cleaned peanuts.....	38	Suggestions.....	85
Car loading and transportation.....	41	Summary.....	86
Freight and steamship rates.....	43	Statistical information.....	87
Leading centers of production and ship-		Publications relating to peanuts and peanut	
ment.....	45	products.....	99
How peanuts reach the consumer.....	47		

The peanut, now a leading money crop in the Southern States, reaches the consumer in many widely different forms. Once grown exclusively for roasting and for feeding to hogs, the peanut is now even more widely known in the salted form, and immense quantities are marketed each year as peanut butter and peanut candy. In some years a considerable volume of peanuts has been crushed and the crude oil shipped to manufacturers of butter and lard substitutes, soap, and salad oil. The course taken by the peanut in its journey from the farm to the consumer, then, is necessarily a varied one, with many by-paths.

<sup>1</sup> Acknowledgment is made to C. W. Kitchen and W. A. Sherman, of the Bureau of Agricultural Economics, for many suggestions, to unpublished data resulting from investigations of N. Menderson, formerly of the bureau, in 1917 and 1918, and to Mrs. R. G. Tucker, Mrs. E. R. Estes and Miss Mary Hall, for the tabulation of many of the figures used in the charts and tables shown in this bulletin.

## HISTORICAL SKETCH

Few crops have experienced such a rapid growth in acreage and production as did the peanut a few years ago. A native of Brazil,<sup>2</sup> the peanut was carried by early slave ships to Africa, whence it was brought to this country along with the slaves in colonial days. The Civil War gave the first important impulse to its culture. Before then the peanut was little known outside of Virginia, North Carolina, and Tennessee. When the Union armies disbanded, the soldiers carried a knowledge and an appreciation of peanuts to all parts of the country. By 1868, 300,000 bushels were raised in Virginia,<sup>3</sup> and 11 years later, in 1879, commercial estimates placed the yield for the country at 1,725,000 bushels.<sup>4</sup>

Hand work in cleaning and preparing the peanuts for market proved impractical on a large scale, and until improved machinery for cleaning and shelling peanuts was invented peanut growing as a business was necessarily of restricted importance. The commercial development of the peanut industry may be said to have begun with the erection of modern factories in Virginia. A small plant was built in Norfolk in 1876, which was increased in capacity in 1880. The second practical cleaning factory was started at Smithfield in 1880, and was considerably enlarged in 1885. Other plants followed, until the Virginia-North Carolina section was well equipped with factories having improved machinery for cleaning and shelling peanuts.

The most rapid growth in peanut production, however, came in the Cotton Belt, notably in Alabama, Georgia, Florida, and Texas. The swift advance of the boll weevil from Texas eastward, with its ruinous effect on the cotton yield in many large areas, caused the farmers to turn to other crops. The peanut promised a market either directly at shelling or crushing mills, or indirectly at pork-packing plants, and a supply of a fine quality of hay. A wave of peanut growing, therefore, swept over Texas, Georgia, and Alabama, and the acreage planted increased rapidly. Scores of new companies for shelling or crushing peanuts sprang up, and many of the older cottonseed-oil mills added the equipment necessary for crushing peanuts. The citizens of Enterprise, Ala., to whom the peanut had brought increased prosperity, voted \$3,000 in 1919 for the erection of a monument to the weevil, on which was inscribed the following: "In profound appreciation of the boll weevil and what it has done as the herald of prosperity, this monument is erected by the citizens of Enterprise, Coffee County, Alabama."

For a few years the peanut boom made money for the farmer. After the armistice in November, 1918, however, the combination of a decreased demand for vegetable oils and heavy importations of Oriental peanuts lessened the interest of southern farmers in this crop. The acreage has fallen off in the Cotton Belt, partly owing to low prices, but so long as the weevil menaces the prosperity of cotton growers the peanut is likely to be a leading money crop in the program of crop diversification now gaining ground in the Southern States. An important factor in its production is the practical freedom of the peanut plant from insect pests or plant diseases. More-

<sup>2</sup> Candolle, A. de. Origin of cultivated plants. pp. 411-415. New York. 1890.

<sup>3</sup> Dodge, J. R. Cultivation of the peanut. In Rpt. Comr. Agr. [U. S.] 1868, p. 220. 1869. In his Report of the Editor.

<sup>4</sup> Worthington, C. Peanuts (*Arachis hypogaea*). In Rpt. Comr. Agr. [U. S.] 1879, p. 143. 1880.



over, mills crushing cottonseed welcome the peanut to their communities, as it furnishes employment for their plants after the cottonseed crush is over. A tabulation of the acreage, yield per acre, and production of peanuts harvested for nuts from 1920 through 1924, will be found on page 87.

### LEADING VARIETIES OF PEANUTS

At least nine domestic varieties of peanuts are now generally recognized as showing sufficiently definite characteristics to be classed separately. The Virginia Bunch, Virginia Runner, and Jumbo are all large-podded, with a reddish skin covering the nut. They differ chiefly in the size of the pod and nut. It is thought that these three were originally one variety, a running plant. A few plants having a bunch habit of growth were noticed among the Runners, segregated, and developed into a distinct variety known as the Virginia Bunch, which is generally larger than the procumbent Runner. The Jumbo has come from selected strains of large size Bunch and Runners, and can now be considered a fixed variety. The Jumbo variety is distinct from the jumbo grade,<sup>5</sup> which may consist of selected large nuts from either the Virginia Bunch, Virginia Runner, or Jumbo varieties. The Virginia varieties are grown chiefly in southeastern Virginia, northeastern North Carolina, and central Tennessee.

The White Spanish peanut, which is grown from the Atlantic to the Pacific, is the most widely distributed variety in the South. Alabama, Georgia, Florida, and Texas are the leading States in its production, with lesser quantities in the Piedmont section of Virginia and North Carolina, in southern South Carolina, and with light production in Oklahoma, Louisiana, Mississippi, Arkansas, Missouri, and California. The pods are of small size, and the skin covering the nut is of a brownish shade, as compared with the reddish color of the skin of the Virginia type. The plant is upright in growth, and is harvested easily, as the pods are closely centered near the surface of the ground.

### LESS IMPORTANT VARIETIES

The Improved Spanish has a larger pod than the White Spanish, of which it is a strain. Commercially, it is usually sold as White Spanish.

Other varieties include the Valencia, found in the vicinity of Wakefield, Va.; the Tennessee Red Skin and the Tennessee White Skin, grown to a slight extent in Georgia and Tennessee; and the African, which is produced chiefly in the neighborhood of Wilmington, N. C., and for this reason is sometimes called the "Wilmington." Although locally prominent in limited areas none of these five varieties are commercially important.

### COMMERCIAL TYPES OF PEANUTS

Three types of domestic peanuts have become recognized in the channels of trade—the Virginia and the Spanish, already mentioned, and the Runner, sometimes called the "Georgia Runner" or "Alabama Runner" to distinguish it from the Virginia Runner, although

<sup>5</sup> Specifications for the jumbo and other grades, as defined by the National Peanut Cleaners and Shellers Association, are to be found on page 31.

the latter loses its identity as a variety as soon as it reaches the cleaning mill and becomes known merely as a "Virginia." The Runner, grown chiefly in Alabama, Georgia, and Florida is a large-podded peanut like the Virginia. It is supposed to have developed from the African variety, its appearance having changed somewhat in its new environment. The Runner was formerly grown primarily for crushing and for hogging-off,<sup>6</sup> but is lately being used to an increasing extent as a substitute for the Virginia in peanut butter and in peanut bars.

Imported peanuts in America come largely from China and Japan. During recent years, at least, Oriental peanuts appear to have been grown from carefully selected Virginia-type seed. So closely do the imported nuts resemble those grown in Virginia that even experts have no infallible way of distinguishing the imported nuts from the domestic when shelled. Unshelled Japanese peanuts, however, are usually distinguishable by the bleached appearance of the shell.

In the Boston market, unshelled Virginias encounter a slight competition at times from peanuts imported from Spain, which have long, jointed pods, containing three or four kernels, and which closely resemble the domestic Valencias. Shelled peanuts similar to the Spanish type grown in the South have recently been imported from Spain in comparatively small volume.

Peanuts from Java are occasionally seen in New York City and in Pacific coast markets. They are slightly larger than the domestic Spanish, but are used for the same purposes.

#### HARVESTING AND CURING

Peanuts are harvested, as a rule, in September and October, before the first frosts in order that the vines may have greater value for stock food. The vines have a slightly yellowish appearance when the plants are ready for digging, although the yellow tinge is more pronounced in the Spanish type at maturity than in vines of the Virginia type. Spanish peanuts frequently mature somewhat irregularly, and at times early formed nuts may sprout before the bulk of the crop is ready to harvest. A test for maturity that is frequently made is to dig a few plants and crack a number of pods. If the inside of the shell shows darkened veins the peanuts are sufficiently developed to dig. Soft white linings in the pods are a certain indication of immaturity. Such pods may seem fully formed outwardly, but if the crop is dug and stacked at this stage many of the kernels are likely to shrivel. And the trade objects seriously to shriveled peanuts.

Peanuts may be dug with an ordinary plow provided with a peanut point and with the moldboard removed, with a potato-digging machine, or with a special peanut digger, of which there are several types on the market. In Virginia and in the Southeastern States it is customary to dig the vines in the morning, shake off the dirt, and after allowing the vines to dry, to shock or stack them in the afternoon. The stacks are built around poles or split stakes about 7 feet high, thrust firmly into the ground. Stout crosspieces are nailed about 8 inches from the ground to keep the nuts off the damp earth and to provide ventilation. The vines are stacked evenly around the poles with pods to the center, pressed down occasionally, and capped

<sup>6</sup> Hogging-off is the practice of turning hogs into peanut fields to eat the peanut vines and root out the nuts.



by a little dry grass or other material as a protection from rain. A well-made peanut stack is shown in Figure 1. Curing normally requires from four to six weeks. If the nuts are picked from the vines before being thoroughly cured the kernels may shrivel. As peanuts are generally sold by weight, shriveled peanuts result in loss in weight as well as in quality. Moreover, if picked when partly cured the kernels may mold in the pods.<sup>7</sup>

Peanut growers in Texas rarely use the stake method in curing. In that State, after the peanut vines are dug they are raked into windrows or forked into small piles about 2 feet high, and are cured



FIG. 1.—A well-made peanut stack, before settling has taken place. Practically no pods are exposed to the weather

in the open without protection from the weather. To some extent this method is used in the Southeastern States for curing Runners. Peanuts so cured may be expected to have a high percentage of weather-damaged kernels. Further, as they are often not picked as soon as they are cured, and since many of the pods lie on the ground, a higher percentage of sprouted nuts may be looked for than with shock-cured vines, thus lowering the quality and grade of the crop.

#### PICKING OR THRESHING

Picking the pods from the vines was once done entirely by hand with negro labor. Now the use of machines to remove the pods is

<sup>7</sup> For details of harvesting see Farmers' Bulletin 1127, Peanut growing for profit, by W. R. Beattie, pp. 15, illus. 1920.

general. Grain-threshing machines with a special cylinder adapted to handling peanuts, are still in general use in the Southwest, and to a slight and decreasing extent in the southeastern tier of States. A carefully regulated cylinder-type threshing machine gives fair results in removing Spanish-type peanuts from the vines and leaves little trash with the pods. Usually, however, sufficient care is not shown in so adjusting the speed of the cylinder as to reduce trash and dirt to a minimum. A greater breakage of pods and kernels also occurs with a threshing machine than with a specially designed picker, thus increasing the percentage of splits or No. 2 peanuts. Kernels in cracked pods often become moldy and rancid. Further, although it is practically impossible for weevils to penetrate a sound, unbroken shell, broken pods offer an opportunity for weevil injury in storage. In consequence, many southeastern shellers decline to buy peanuts that have been threshed unless they can arrange to shell the stock

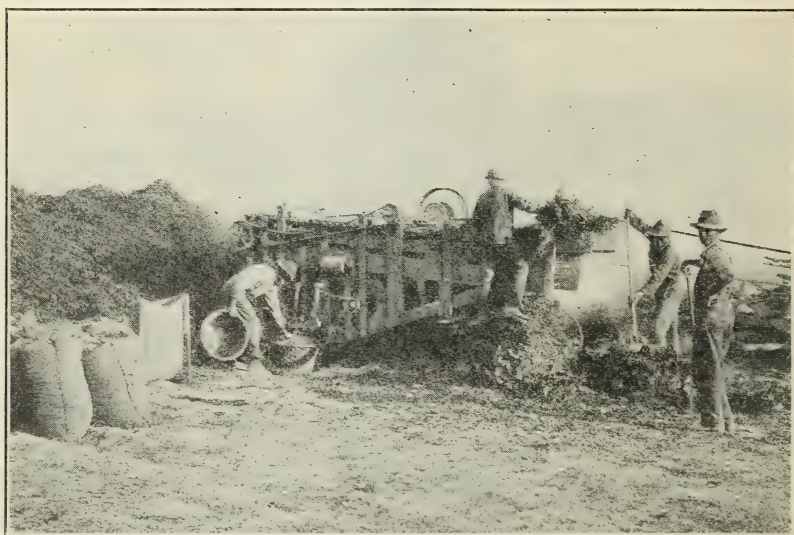


FIG. 2.—A commercial peanut picker in operation. The pile at the left of the picture consists of vines and foreign material remaining after the pods were picked; the lumber at the extreme right is a portion of the stakes around which the vines were stacked and which are not usually removed until the stacks are brought to the picker

before weevil injury is likely to occur. Breakage of the pods in the thresher is reduced to a minimum by proper feeding into the hopper and by properly regulating the speed of the cylinder.

The large-podded varieties of peanuts tend to break badly in threshing machines, and in Virginia and North Carolina the thresher type of machine has been rather generally replaced by patented picking machines. (See fig. 2.) In these machines the vines are dragged over a horizontal frame, on which is a wire netting. Springs separate the vines, allowing the nuts to catch in the netting with little breakage, while the vines are carried away on a belt conveyor. Many machines have recleaning attachments, designed to remove much of the dirt and trash adhering to the pods, and a fan which blows out sappy peanuts and trash.

Hardly one-fifth of the farmers growing peanuts in Virginia and North Carolina own picking machines, and the work is usually done



by a traveling or custom picker who operates his machine for a given charge per bushel or per sack of peanuts picked. During the past two or three years this charge has ranged from 30 to 40 cents per 4-bushel sack of farmers' goods, based on the number of sacks picked. In the Southeast in 1924, when the picking was done for cash the usual charge was around \$8 to \$10 per ton. Often picking was done on the basis of payment in peanuts of one-tenth to one-eighth of the quantity picked, depending on the size of the crop and the acreage in the immediate vicinity. In Texas most threshers charged 12 to 15 cents per 30-pound bushel for threshing large lots in 1924. Some large lots were threshed for 10 cents per bushel, but higher charges were made for small quantities.

Since the income of the commercial picker is dependent on the volume of peanuts picked, the frequent tendency is to feed peanuts into the machine as fast as it will take them, and the special attachments are often removed as a means of increasing the speed of the machine. The result is that much trash and dirt and portions of vines come through the picker with the pods, adding weight to the farmer's lot of peanuts, but materially lowering the grade.

After picking, peanuts in Virginia and North Carolina are sacked, usually directly from the picking machine, in 4-bushel bags holding on an average about 88 pounds of Virginia type or 120 pounds of the Spanish stock. In Texas some bags of this size may be found, but often miscellaneous secondhand sacks of varying capacities are used. After the tops of the bags are sewed they may then be hauled to a storage building on the farm or at a town near by, to a local factory, a country merchant or other buyer, or to the railroad station for shipment.

The unit of sale in Texas, Virginia, and North Carolina for the Spanish variety is the 30-pound bushel, although according to Texas law a bushel of Spanish peanuts weighs 24 pounds. The large-podded nuts in Virginia, North Carolina, and Tennessee, weighing about 22 pounds to the bushel, are sold by the pound. In the southeastern area peanuts customarily move to market in bulk, and are sold on the basis of the 2,000-pound ton. To a lesser extent, bulk shipments of farmers' grade peanuts are made in the Southwest.

### HOW PRODUCTION IS FINANCED<sup>8</sup>

Most producers find it necessary to borrow some money, or to use credit, in growing their peanuts. This financial assistance may be used to buy seed, fertilizer, or supplies. The method of financing production is important because it often determines the method of sale of the harvested product and when it shall appear on the market.

#### VIRGINIA-NORTH CAROLINA SECTION

In the Virginia-North Carolina peanut belt approximately 60 per cent of the crop is produced on small farms operated by the owners. A few farms are operated by cash renters; the remainder are farmed on a share-crop arrangement. Under the half-share arrangement, which is most common, the landlord furnishes land, stock, and half the fertilizer and seed. A one-third share arrangement is sometimes

<sup>8</sup> Acknowledgment is made to G. E. Cadisch and O. D. Miller, who investigated crop financing in 1923 and who supplied much of the material for this portion of the bulletin.

made whereby the tenant furnishes stock, labor, and two-thirds of the fertilizer and seed, and the landlord receives one-third of the crop.

Credit for financing production is extended chiefly by local supply merchants and banks, although in some towns commission dealers advance considerable credit.

The local supply merchant usually tells the grower in the spring to what extent he may expect credit on either an open account or by a note arrangement. If on a note, this note usually matures in November or December and frequently bears no interest until after maturity. A crop lien is frequently taken by the local merchant to secure advances made on the poorer credit risks. Supplies covering most of the grower's needs are sold to him each month until the credit allowance is exhausted. The merchant in many cases attempts to regulate each month's advances in accordance with the total credit granted. In the fall the merchant usually buys the peanuts at the prevailing market price, and the accounts are settled.

Loans by the banks are made chiefly to growers having a good credit rating, or to the supply merchants. Bank loans are usually for six months at 6 per cent interest collected in advance, on notes secured by one or two indorsements. The personal notes of tenants are often indorsed by their landlords.

When a commission dealer finances production, he usually takes a crop lien and a note maturing about December 15. As a rule no interest is charged where supplies alone are furnished. When cash advances are made, as sometimes happens, 8 per cent interest is charged on the money. The dealer's funds are obtained from his own capital or from bank loans, which may be secured by indorsements or by growers' notes deposited as collateral for the dealer's note. In consideration for the advances, the grower normally agrees to sell his harvested peanuts through the commission dealer.

It is not usual for the cleaners and shellers to do any direct financing for production purposes.

#### GEORGIA AND ALABAMA

In marked contrast to the small-farm system in Virginia and North Carolina, peanut production in Georgia and Alabama is carried on principally on large farms operated under the plantation system and in conjunction with cotton growing. Less than 25 per cent of the crop is grown by small farmers on their own land. Individual landlords operate farms ranging in size from 100 to 3,000 acres and there are a few farming concerns which operate as much as 6,000 to 8,000 acres.

The plantations are divided into "plow" units of about 30 acres, an area which can be conveniently farmed by one man with a mule and plow. Under the usual arrangement tenants known as croppers farm on a share basis, by which the landlord furnishes the stock, tools, dwelling, and half the fertilizer and seed used, and also makes advances in the form of money, provisions, and clothing to a limit of \$6 to \$10 per month from January to July, inclusive, receiving half the crop as his share. The farms are operated under the supervision of a farm manager and practically all of the croppers are negroes.

From his half the tenant must repay the landlord for his advances. Usually the landlord takes payment in the form of crops at the



market price, but if the cropper does not wish to sell his share at harvest time he is sometimes allowed to store it on the farm or in a warehouse, paying the landlord interest on his advances dating from August 1.

In the more important centers supply stores play a very important part in financing peanut production in this territory. They carry practically every article needed by farmers, from fertilizer to provisions and clothing. Some of these stores are operated by farming companies and sell only to their croppers. Others do a large credit business with landlords, small owners, and even renters. When a customer arranges for credit the merchant takes a promissory note and often also a crop lien or chattel mortgage, and usually arranges that the credit shall be traded out at a fixed rate per month. Notes are made to mature in September or October. Customers' bills, particularly in the case of small owners and renters, usually are paid in peanuts and cotton; and although it is not so specified in the lien, it is understood that the supply company is to have the privilege of buying not only enough goods to satisfy the account but the customer's whole crop. Stores carrying a general line of merchandise allow liberal credit to their farmer customers, in many cases even carrying croppers for the landlord's account.

It is estimated that about half of the financing requirements of peanut growing is supplied through loans from local banks. Many landlords are obliged to borrow heavily to finance their operations and most small owners and renters must borrow a little. Loans may range from \$35 to \$100 per plow. Usually they are made in March for a period of six months. The notes are secured by crop liens or, in some cases, by chattel or real-estate mortgages.

The average grower in this territory does not fertilize for growing peanuts, but attempts to raise a commercial crop successfully without fertilizer. Those who do use fertilizer may buy it on credit from the supply stores or manufacturers' representatives, but recently credit buying has been discouraged by increasing the discount for cash.

With few exceptions the shelling and crushing plants in Georgia and Alabama do little directly in the way of financing peanut production. Several concerns have for a number of years sold considerable seed on credit to small growers in the vicinity of their plants, taking a promissory note and a lien on the crop as security for the obligations. This was done in order to induce the farmers to grow peanuts and thus furnish more work for the plants.

#### TEXAS

Peanut production in Texas is financed largely by the landlords, and the loans are repaid, usually in peanuts, at harvest time. Occasionally the crop is sold and payment made in cash. Money borrowed from the bank is usually repaid from the proceeds of the sale of the crop.

#### MARKETING METHODS

As the peanut finds its way into consumption to-day it is essentially a manufactured or milled product. The Virginia-type peanuts which are sold in the shell by the vending trade have been cleaned, polished, powdered, and assorted into sizes before leaving the mill. Finally, they are roasted before being sold to the consumer. Shelled peanuts

require even more handling before they reach the form in which they are offered for sale. Thus two main steps of distribution enter into the marketing of peanuts: (1) Movement from the farm to the cleaning, shelling, or crushing plant, and the milling operations necessary to place the product in condition to ship. (2) Movement from the mill to the ultimate consumer.

#### METHODS OF MARKETING FARMERS' STOCK PEANUTS

The bulk of the peanut crop is sold by the growers within a few months after the stock has been harvested and picked or threshed—sometimes within a few weeks. In the Southeast and the Southwest only a comparatively small portion of the crop is to be found in the hands of the growers by the middle of December. The crop of Runners in the Southeast, however, often remains unsold later than the Spanish crop, as it is harvested later. By the first of the year the bulk of the peanuts has usually left the farms in Virginia and North Carolina and has found its way either to commercial storages or to cleaning plants.

Farmers who are under obligation to country merchants for credit advances during the growing season, usually sell to the merchants a large portion of their crop, or all of it, soon after it has been threshed or picked, in order to pay the indebtedness. The usual result is that more peanuts are offered than the market can readily absorb, and the price declines. When the decline takes place there are usually a number of speculators, often country merchants or cleaners, ready to buy peanuts at the lower prices and hold them in storage. Later, when prices have again advanced, profit-taking occurs, and peanuts bought for speculation reappear on the market, exerting a depressing influence on the prevailing market price. Thus a peanut grower who has held a portion of his crop for several months may find that his later offerings are in direct competition with his own peanuts bought months earlier by speculators. The fluctuation in market prices is a natural consequence of rushing the crop to market so early in the season, and may be expected to continue until the growers as a whole are able to market their crop in a steady, even flow throughout the year.

Special features of marketing in the three leading peanut sections are discussed separately.

#### VIRGINIA AND NORTH CAROLINA

On sales made through the supply merchant, a commission of  $2\frac{1}{2}$  per cent is usually charged. The dealer can obtain the peanuts as soon as they are harvested, but an option is sometimes given the grower to store the nuts at a charge of around 5 cents per bag for the first month and 4 cents per month thereafter, and sell them later in the season. If the peanuts are stored the dealer will lend the grower 60 to 75 per cent of their market value, charging the current rate of interest on the advance. Most local merchants store or hold their goods for later marketing, whether full title to the peanuts has passed to them or not. Where the merchant's storage space is limited, the peanuts are sent to a central commercial warehouse.

Farmers who are not obligated to sell to the country merchant often dispose of their peanuts for cash to representatives of the cleaners, who may be traveling buyers or local merchants, and who



purchase the stock in the field after it has been stacked. A commission, usually 7 cents per bag, has been paid their buyers by the cleaners during recent seasons. Occasionally a grower ships his peanuts direct to a warehouseman, to be stored and sold on his order.

Members of the local growers' cooperative association deliver their goods to the mill that cleans for the association. Upon delivery they are graded, an amount equal to about half the market price is advanced, and final payment is made after full settlement of the season's pool.

#### GEORGIA AND ALABAMA

In the neighborhood of most towns in which there is a shelling or crushing mill the bulk of the crop of independent farmers is sold for cash direct to that plant. Producers under obligations to local merchants usually sell their entire crop to these merchants, since as a rule the latter will pay a cash price equal to that offered by the nearest sheller for all peanuts in excess of those required to settle the accounts, or will allow as much as \$5 per ton more if the grower is willing to have the returns apply on future trade.

Many small country merchants are equipped with storage space and make a business of buying for cash the peanuts grown in their vicinities. They may do this as a matter of private speculation or in the capacity of agent for a shelling or crushing mill or for a broker at some other point. A commission of \$2 to \$3 per ton is paid local agents for assembling carlots and shipping them from outlying points. When the buyer takes care of all storing, loading, and handling charges, the commission is usually \$2.75 to \$3 per ton. If the sale is for goods which the merchant has purchased for his own account the price is usually arranged by telephone or telegraph, and the merchant is allowed to draw on sight draft attached to bill of lading for not over 80 per cent of the selling price, immediately upon shipment. The buyer remits the balance of the price by check when the shipment has been received and the weights confirmed. This system of marketing peanuts differs in no essential respect from the method employed in marketing cotton in the same area.

Members of the growers' cooperative association deliver their peanuts when directed by the association to a warehouse or to the cars for shipment elsewhere. Preliminary advances of one-half to two-thirds the value of the peanuts are made upon delivery; final payments are concluded after the season's pool has been settled.

In a few counties in the Southeast, farmers' stock peanuts have at times been marketed through the medium of a "sales day," a scheme copied from the hog-sales day. The local banker, the county agricultural agent, or large merchants, are chiefly responsible for the gathering. All the peanut farmers in the county at least are notified that a peanut-sales day is to be held at some central point, usually the county seat. They are urged to bring their peanuts to town on that day, with the assurance that a number of responsible buyers will be present. The bringing together of a considerable quantity of peanuts makes it worth while for near-by shelling plants, brokers, and independent buyers to be represented, and the presence of a number of buyers should create a competitive market. This auction method of sale, however, is seldom utilized.

## TEXAS

Peanuts in Texas and adjoining States normally leave the farms more rapidly than in the other two leading sections. Most of the crop which is not hauled direct to a mill is bought from the farmers by a local merchant who may definitely represent a sheller or may be an independent dealer, selling wherever he can make the most profit. The farmer is paid cash for his peanuts.

Peanuts are practically never stored in commercial warehouses in Texas, nor are they stored to any extent in the farmers' own buildings. The farmer begins to haul as soon as a few peanuts are picked, and the local merchant ships as rapidly as he can get carlots together. The shellers store in their own plants so far as possible, but during the heavy buying season considerable quantities of peanuts are held in temporary storage at shipping points until space becomes available for them at the buyers' plants.

Unlike those in other sections, peanut buyers in Texas do not usually work on a commission basis. Buyers for shelling plants ordinarily work for salaries; others buy as cheaply as possible, and sell for what they can get. Less speculation is noticeable than in the Eastern States as the merchant usually sells to a mill as soon as he has a carload bought or in sight. Crops of peanuts are not usually contracted for in advance.

## WAREHOUSING

When the harvested peanuts are hauled from the field, they may be stored temporarily in any available space so long as it is dry and well-ventilated. Sheds and lofts of barns are commonly used, and the large independent growers may have frame warehouses. If the peanuts are to be kept on the farm for any length of time, however, protection from rats and mice should be afforded. Some growers attempt to keep out the rats by building the floors of the storage houses above the ground. Others find that the only way the sheds can be made rat-proof is by lining them with quarter-inch mesh galvanized wire.

Many growers prefer to store their peanuts in commercial warehouses (fig. 3) so that they can obtain loans on them from the warehouseman or from a banker. Numerous storage warehouses have accordingly been erected in the peanut belt of Virginia and North Carolina, notably at Suffolk, Petersburg, Norfolk, and Franklin, Va., and at Edenton, Scotland Neck, and Plymouth, N. C., for the convenience of growers, merchants, and cleaners. The southeastern and southwestern sections are not yet so well equipped with commercial storages as is the Virginia area, although their number is increasing in Georgia. These warehouses exert a steadying influence upon the farmers' market, and tend to promote a more intelligent and rational distribution of the crop from the grower to the factory.

At present most of the peanuts stored in commercial warehouses are shipped from country points by the local merchants or growers in solid carlots, but some goods are hauled from near-by points in smaller quantities. In Virginia, North Carolina, and Texas, most peanuts are stored in sacks; in the Southeast, usually in bulk. In either case, a shrinkage loss of 3 to 5 per cent in weight during the average storage period is considered normal.



The grower who is able to hold his crop may haul or ship his peanuts to the warehouse as the weather permits, and receive a warehouse receipt. As the modern warehouses are well-ventilated and practically fireproof and rat-proof, peanuts can be stored in them under conditions far superior to those obtainable on most farms. The value of the commercial storage located near a peanut factory or at track side is especially evident during periods of prolonged bad weather. At such times the condition of the roads renders it difficult for the farmer to haul his peanuts to market, and the mills may then be obliged to replenish their stocks by drawing on the warehouse. Further, it is only natural that mills should prefer to have goods delivered to them from a clean, dry storage than from the type of storage available on most farms.

The warehouse receipt may be either negotiable or nonnegotiable and may be pledged as collateral at almost any bank for a loan of

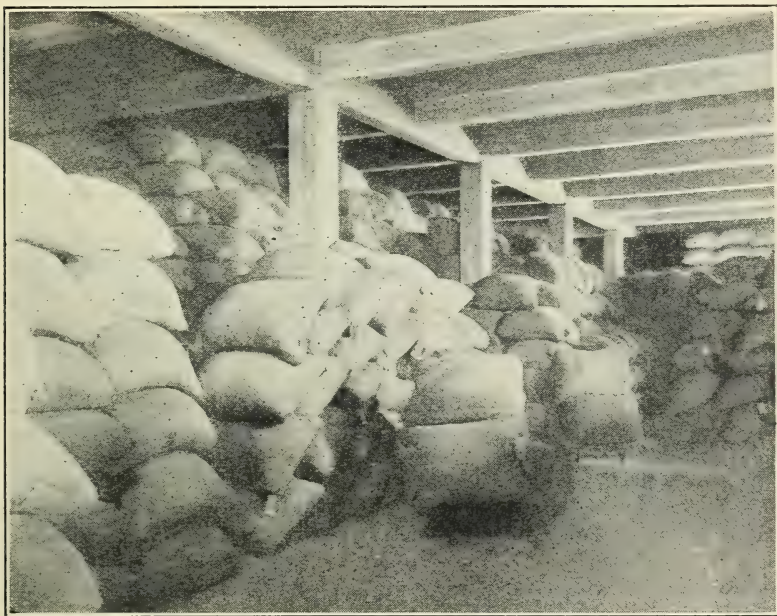


FIG. 3.—Farmers' stock peanuts in a commercial storage in Virginia. The use of tags assures the owner of having his own stock returned to him or sold for his account

usually not over 60 per cent of the market value of the peanuts. If the grower or merchant does not care to handle the loan through the bank, he may hypothecate or surrender his warehouse receipt to the warehouseman, who will usually advance as much as 60 to 75 per cent of the market value of the peanuts at the prevailing rate of interest. Proper loss clauses are attached to the insurance policies in favor of those making the loans. In the event that prices decline, or the bank deems itself insecure for any reason, it may demand additional collateral or a reduction in the loan. Usually however, peanuts having loans against them are sold through the warehousemen when and as directed by the grower or merchant storing them. The amount of the loan, interest, storage charges, and the commission charge of usually  $2\frac{1}{2}$  per cent, are deducted when the sale is made, and the remainder remitted to the grower.

During the past two or three years the charge for storage in commercial warehouses in Virginia has been about 4 cents for a 4-bushel bag for the first month, and 4 cents for succeeding months, with a minimum charge of 9 cents per bag. As the storage charge includes the cost of unloading, handling, reloading, and insurance, it will be seen that the cost of storing peanuts is only nominal.

The warehousemen frequently obtain from the local banks the money needed to carry them. The usual arrangement is on a straight note up to a definite amount, after which the peanuts, as represented by warehouse receipts and insurance policies with proper loss clauses attached, are pledged as collateral for further loans. As some of the bankers and cleaners are stockholders in warehouses, and some of the cleaners and warehousemen are also stockholders in local banks, a close interest exists between them.

#### UNITED STATES WAREHOUSE ACT

In September, 1923, peanuts were named as a storable product within the meaning of the United States warehouse act, which is administered by the United States Department of Agriculture. The primary purpose of this act was to establish a form of warehouse receipt which would be acceptable generally as collateral for loans. Growers, merchants, cleaners, or shellers who store peanuts in warehouses under this act, are afforded security from loss, as the warehousemen are licensed by and bonded to the Government to preserve carefully and return the goods stored with them. Identical bags are returned if the peanuts are sacked; but if in bulk, any peanuts of the same grade and quantity can be delivered, unless definite arrangements were made to preserve the identity of a special lot. The licensed warehouses are subject to Federal inspection at least four times each year.

The warehouse receipts furnished by warehouses licensed under the warehouse act are accepted by banks generally, and in all cases by the Federal Intermediate Credit Bank, as collateral for loans.

Up to September, 1925, a number of warehouses had been licensed by the Department of Agriculture for the storing of peanuts in the States of Georgia and North Carolina. Complete information on the subject can be obtained upon request to the Warehouse Division, Bureau of Agricultural Economics, United States Department of Agriculture, Washington, D. C.

#### GRADES FOR FARMERS' STOCK PEANUTS

One chief obstacle to the marketing of peanuts has been that well-recognized, definitely-established grades for farmers' peanuts have been lacking. For the Spanish type this condition has recently been corrected, by the offering of tentative grades by the United States Department of Agriculture. (See pp. 17 and 18.) Definite grades are also needed for peanuts of the other types.

#### GRADES IN VIRGINIA-NORTH CAROLINA SECTION

Peanuts of the Virginia type reach the consumer both in the shell and as shelled goods. When there is the customary price ratio between these two classes, it is more profitable for the cleaner to sell in the shell all peanuts that have the necessary size and appearance.



Accordingly, Virginia-type peanuts are bought on the basis of the percentage of jumbo and fancy peanuts that can be picked from samples of nuts taken at random from the lot.

If the peanut grower brings his crop directly to the factory, the wagonload is weighed and the lot sampled by the buyer for the plant. If the stock is mature and does not contain more than an average amount of foreign matter, it is priced according to current market quotations. Well-picked and poorly-picked lots are seen in Figure 4. An unusual amount of dirt and trash sometimes causes a reduction in price. The general run of peanuts varies in size from season to season; to maintain to some extent a suitable ratio between the relative amounts of cleaned jumbos and fancys put out by the cleaning plants, the sizes of the grades were formerly adjusted arbitrarily each year at the mill, by changing the spacing between the rods in the grading machine. Thus in a season in which peanuts generally did not grow large the producer would receive proportionately higher prices

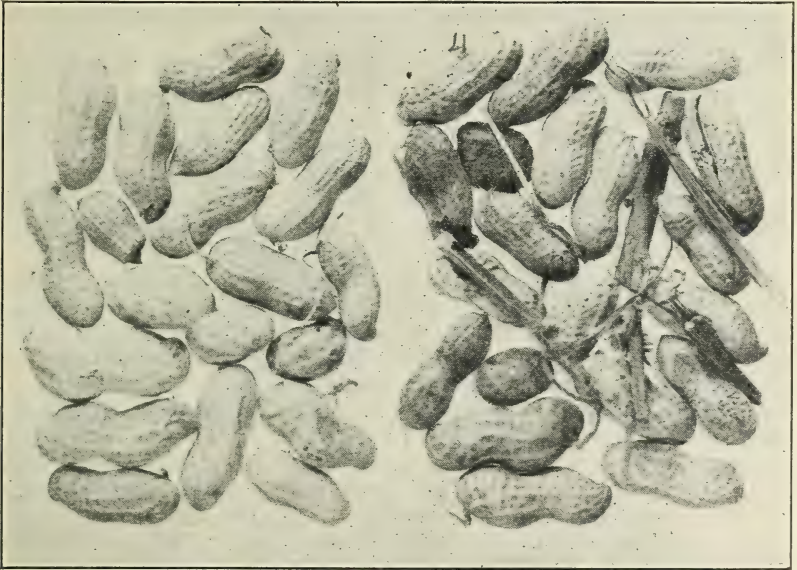


FIG. 4.—Farmers' stock Virginia-type peanuts, well picked (left) and poorly picked (right). (Reduced one-half)

for small stock than in a year which was favorable to the growth of large-sized peanuts. On December 13, 1921, revised specifications for jumbos and fancys (as well as for extras and shelled goods) were established by the National Peanut Cleaners and Shellers Association, a trade association of many of the leading shellers and cleaners in the Virginia-North Carolina section (see p. 31), which should insure the minimum sizes of these grades remaining unchanged among association members. However, many members of the trade feel that in view of the competition from well-graded oriental peanuts, further tightening of the grades for domestic Virginia-type peanuts is necessary.

Peanuts are largely bought by type and variety. Spanish stock is handled by itself and need not bear any definite relation to the

price paid for Virginias. Among Virginias, the price is usually determined by the variety. Bunch peanuts bring slightly more than Runners, and Jumbos command a premium over the smaller varieties. The term "Jumbos" is sometimes applied to any lot, whether of the Jumbo variety or not, that will pick out over a certain percentage of cleaned jumbos and fancys.

According to some authorities, if samples taken from the farmer's load show 55 to 60 per cent fancys and jumbos, the lot is called No. 1 or jumbo grade. To be classed as No. 2 grade it must pick out 40 to 55 per cent fancys and jumbos; and No. 3 grade is assigned to any lot containing less than 40 per cent fancys and jumbos. Lots picking less than 40 per cent fancys and jumbos are usually sold as shelling stock. In years when the crop is running poor in quality some buyers designate any lot running over 50 per cent jumbos and fancys as No. 1, with the other grades correspondingly lower.

Farmers' stock peanuts are often bought on appearance only, without actually sampling the lot. The buyer merely estimates the percentage of jumbos and fancys the lot contains, and makes his offer accordingly.

The percentages of the different grades in the crop vary greatly from season to season. In one recent year, for example, which was noted for its low percentage of large sizes, farmers' stock ranged approximately 10 to 15 per cent jumbos, 50 to 55 per cent No. 2, and the remainder was shelling stock. The following season shelling stock composed practically half of the out-turn and the percentage of jumbos was noticeably greater than during the preceding year. No. 2 stock was much less than during the year before.

As hauled from the farms many lots of peanuts contain entirely too great a proportion of dirt, stones, trash, and other foreign material, which lowers the grade. Growers contend that no premium is received for better graded, carefully picked peanuts, and that thus they have no incentive to grade properly.

Buyers for mills and brokers, who work on a commission basis, receiving the same fee for each bag or ton of farmers' stock purchased, at times encourage this feeling on the part of the grower, as the chief interest of these buyers lies in purchasing a specified quantity and in securing their commission. On the other hand, buyers profess to be helpless in the face of competition. They claim that if they refused to purchase nuts not properly cleaned, such stock would be accepted by competitors, and their own business would suffer.

Probably the average 4-bushel bag of farmers' stock Virginias contains 4 to 10 per cent of foreign material, mostly around 5 per cent, although in some seasons many bags contain a much higher percentage of trash and dirt. Cleaners say that 25 to 40 per cent, and even higher, of trash and dirt was found in many bags of farmers' Virginias coming from certain districts of the Virginia-North Carolina section during the 1922-23 season.

The presence of this worthless matter adds to the already high charges for hauling and freight. The grower loses heavily in his picking charges when the picking machine is so carelessly adjusted or operated that excessive quantities of trash are allowed to drop into the bag with the peanuts. As the picker charges a certain amount for each bushel turned out by the machine, he is often paid the regular picking fee for many bushels of foreign material during the



course of a day. Moreover, the grower must assume the cost of extra bags necessary in sacking trash, dirt, sticks, etc. The cleaner loses both in the added expense of separating the pods from dirt and trash, and in paying peanut prices for this material, and somebody pays transportation charges on the foreign material. The cleaner's only recourse is to reduce his buying price, and bags containing more than the average of foreign matter are docked heavily if detected. The grower is paid for the gross weight of the bags and their contents.

#### GRADES IN SOUTHEASTERN AND SOUTHWESTERN UNITED STATES

Spanish and Runner types of peanuts are all shelled before they are shipped from the peanut belt. Therefore, the principal factor in determining the value of farmers' stock of these types is the

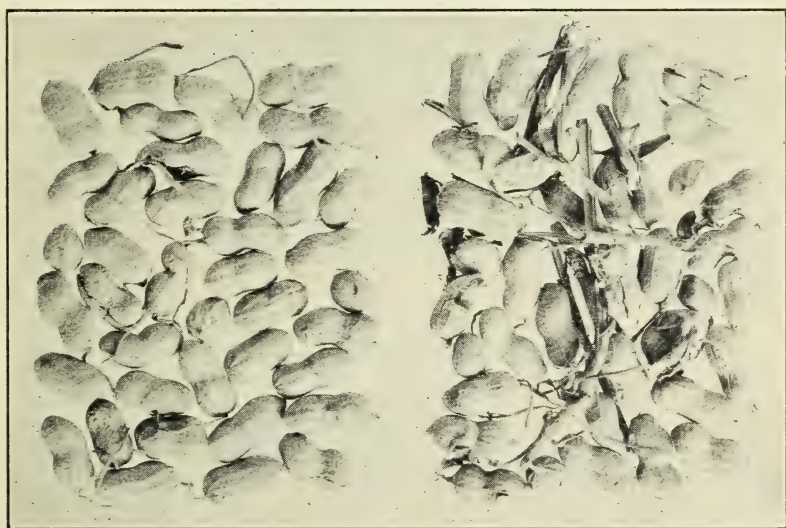


FIG. 5.—Farmers' stock Spanish peanuts, well picked (left) and poorly picked (right). (Reduced one-half)

quantity of good kernels that can be shelled from a given lot. And since they do not move into consumption in the shell, the size of the pod is immaterial in determining the grade or the price to be paid, as is the case with peanuts of the Virginia type. Well-picked and poorly picked lots of farmers' stock Spanish peanuts are seen in Figure 5.

In response to many requests from southeastern shellers, and to provide definite grades for use in connection with the United States warehouse act, careful investigations were made, and in September, 1923, the United States Department of Agriculture offered tentative grades<sup>9</sup> for farmers' stock Spanish. These grades, revised to September 1, 1925, follow:

*U. S. No. 1* shall consist of unshelled White Spanish peanuts which are mature, dry, free from damage from any cause and which will not pass through a screen of the type customarily in use, having  $\frac{1}{4}$  by  $\frac{3}{4}$  inch perforations.

<sup>9</sup> These and other Federal grades in this bulletin are subject to revision. Latest copies can be secured from the Bureau of Agricultural Economics, U. S. Department of Agriculture, Washington, D. C.

In order to allow for variations incident to proper handling, not more than 2 per cent, by weight, of the lot may consist of shelled peanuts; and not more than 1 per cent of other varieties of peanuts. When shelled, not less than 70 per cent of the total unshelled weight shall consist of sound and mature kernels. In addition, not more than 2 per cent of the total unshelled weight may be damaged; provided that for each fractional per cent of sound and mature kernels above 70 per cent there may be an equal percentage of damaged kernels above 2 per cent, but in no case shall the damaged kernels exceed 3 per cent in U. S. No. 1.

*U. S. No. 2* shall consist of unshelled White Spanish peanuts which are mature, dry, free from damage from any cause and which will not pass through a screen of the type customarily in use having  $\frac{1}{8}$  by  $\frac{3}{4}$  inch perforations.

In order to allow for variations incident to proper handling, not more than 2 per cent, by weight, of the lot may consist of shelled peanuts; and not more than 1 per cent of other varieties of peanuts. When shelled, not less than 65 per cent of the total unshelled weight shall consist of sound and mature kernels. In addition, not more than 2 per cent of the total unshelled weight may be damaged; provided that for each fractional per cent of sound and mature kernels above 65 per cent there may be an equal percentage of damaged kernels above 2 per cent but in no case shall the damaged kernels exceed 5 per cent in U. S. No. 2.

*U. S. No. 3* shall consist of unshelled White Spanish peanuts which are mature, dry, free from damage from any cause, and which will not pass through a screen of the type customarily in use having  $\frac{1}{8}$  by  $\frac{3}{4}$  inch perforations.

In order to allow for variations incident to proper handling, not more than 2 per cent, by weight, of the lot may consist of shelled peanuts; and not more than 1 per cent of other varieties of peanuts. When shelled, not less than 60 per cent of the total unshelled weight shall consist of sound and mature kernels. In addition, not more than 2 per cent of the total unshelled weight may be damaged; provided that for each fractional per cent of sound and mature kernels above 60 per cent there may be an equal percentage of damaged kernels above 2 per cent, but in no case shall the damaged kernels exceed 6 per cent in U. S. No. 3.

*U. S. Sample Grade* shall consist of any lots not meeting the requirements of the foregoing grades.

#### Requirements of United States grades

[Percentages based on total unshelled weight]

Grade	Allow- ance for shelled peanuts	Allow- ance for other varieties	Sound kernels	Allow- ance for damaged kernels
	Per cent	Per cent	Per cent	Per cent
U. S. No. 1	2	1	70	2
			71 or more	3
			65	2
U. S. No. 2	2	1	66	3
			67	4
			68 or more	5
			60	2
			61	3
U. S. No. 3	2	1	62	4
			63	5
			64 or more	6

As used in these grades, "free from damage" means shelled peanuts which are not dirty, moldy, rancid, decayed, sprouted, wormy, or discolored.

These grades were adopted by the Southeastern Peanut Association, a trade association of many of the leading shellers and crushers in Georgia, Alabama, Florida, and South Carolina, and have come into rather widespread use in the Southeastern States for purchases of Spanish peanuts.

The idea advanced in the tentative grades of the Department of Agriculture—that of buying and selling on a basis of the shelled-goods content of a lot—has been generally adopted in the Southeastern States. In grading a farmer's peanuts, a representative sample is taken from each lot, or from different parts of one lot if it is large.



The entire sample is weighed, the foreign matter is removed, the pods are hand shelled, and the weight of the sound mature kernels is determined. The damaged kernels are weighed, and if more than a reasonable amount are found the buyer makes a rather heavy deduction from the prevailing price for good stock to cover the cost of picking out the damaged goods by hand in the shelling plant.

Now that the dividing lines between the various grades are well-established, closer scrutiny is given to the quality of farmers' stock when it is bought. The grower whose peanuts are carefully picked before delivery receives a higher price for his stock, while the careless grower is penalized.

The new policy is also better for the buyer, who now seldom resorts to the old "hit-or-miss" plan of purchasing. Formerly, scant attention was paid to the shelled-goods value of the farmers' stock. With no well-defined grades as a basis of trading, confusion often resulted. Growers were frequently dissatisfied, because they felt that they had not received a price commensurate with the quality of the goods delivered. On the other hand, after shelling various lots the buyers have sometimes felt that they paid too much for the stock. Thus the availability of a definite, well-understood basis for determining values has been generally greeted with approval.

Unless the peanuts are to be shelled at once, cracked or broken pods are extremely undesirable in a lot of farmers' goods of any variety, as the kernels in the damaged pods are susceptible to mold and weevil attack, and it is difficult to pick out moldy or weevily kernels as they pass over the screens and belt-conveyors in the shelling plant. Further, as nuts in broken pods often arrive at the shelling machine already shelled, the kernels are frequently broken in the cylinder and are useful only for crushing or stock feed.

Those who pay attention to careful harvesting, picking, and grading receive good dividends in the higher percentage of No. 1 nuts obtained. A 30-pound bushel of farmers' stock Spanish peanuts should shell out about 21 or 22 pounds of kernels. In the Virginia-North Carolina section approximately 16 or 17 pounds of these will be No. 1 grade, 3 to 3½ pounds will be splits or No. 2, and the remainder will consist of No. 3 grade. In Georgia and Alabama the yield of No. 1 stock usually reaches 16 to 17 and sometimes 18 pounds per bushel, No. 2 will average 3 to 3½ pounds, and No. 3's and pick-outs will total about 1 pound. In Texas the quantity of No. 1 nuts may reach 16 pounds, but will frequently total less than 15 pounds, and sometimes as low as 12 pounds to the 30-pound bushel. The Texas outturn, moreover, owing to the almost universal use of threshers, usually shows a higher percentage of No. 2 and No. 3 peanuts than does the output of the other Spanish-growing areas.

#### IMPORTANCE OF LARGE SIZE

It is often said that the percentage of large sizes in the production of Virginia-type peanuts has apparently been decreasing in recent years. On the other hand, the demand for large shelled peanuts, owing to the growth of the salting industry, has been increasing rapidly. In fact, leading salters claim that they have been obliged at times to use large-size orientals heavily, to fill their orders, because the supply of extra large Virginias has not been sufficient for their needs.

The proportion of large nuts in the crop varies greatly from one year to another. A study of the f. o. b. prices prevailing at the principal shipping points in Virginia and North Carolina shows that during the 1920-21 season a very wide price range prevailed between the extra large and the No. 1 Virginia shelled grades. During most of this period buyers were obliged to pay for the larger size nuts from two to three times the figure at which No. 1 stock could be bought. This wide spread in prices made it profitable for oriental shippers to sell large-size peanuts in American markets, notwithstanding the tariff of 3 cents per pound effective during the latter part of the season. The premium for large nuts in the shell was less marked, yet jumbos were generally listed at 150 to 175 per cent of the price for the fancy size.

PRICES F.O.B. VIRGINIA-NORTH CAROLINA SHIPPING POINTS  
OF CLEANED JUMBO AND FANCY VIRGINIA-TYPE PEANUTS  
NOV., 1920-OCT., 1924

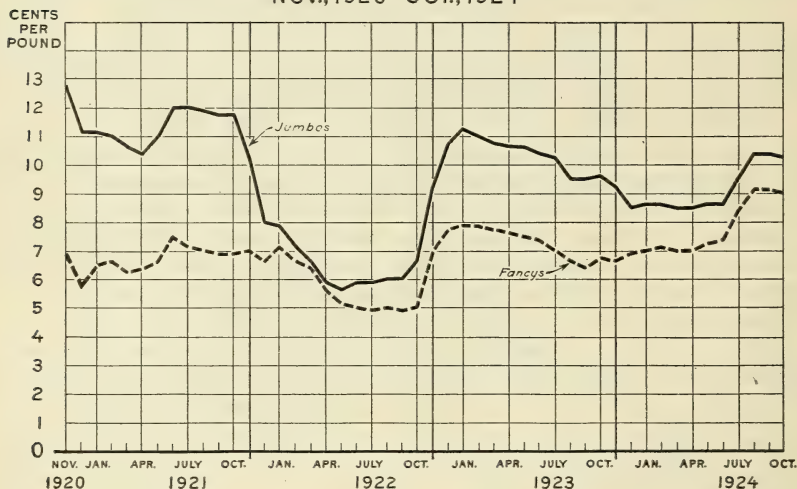


FIG. 6.—A wide range between the prices of jumbos and fancys indicates a scarcity of the large-size nuts

Many growers planted selected seed<sup>10</sup> the following spring. Owing partly to this and partly to weather conditions during the summer of 1921, the crop that year contained a much higher proportion of large pods than did that of 1920. As a result, the difference in price between jumbos and fancys, and between extra large and No. 1 shelled Virginias became very narrow, as shown in Figures 6 and 7. During the 1922-23 season the range in price between the grades again spread, as a result of a larger proportion of medium-size nuts in the 1922 crop. In the following season an increase in the proportion of large peanuts brought the selling price for the first and second size nuts, both shelled and unshelled, closer together again.

#### FARMERS' COOPERATIVE ORGANIZATIONS

Several attempts have been made to organize the peanut growers into cooperative groups for disposing of their crops. Few of these organizations have been successful.

<sup>10</sup> The production and selection of seed is discussed in Farmers' Bulletin 1127, Peanut Growing for Profit, by W. R. Beattie.



THE PEANUT GROWERS ASSOCIATION (VIRGINIA AND NORTH CAROLINA)

The Peanut Growers Exchange, reorganized in 1921, and claiming to include in its membership of more than 5,000, enough growers to control more than 40 per cent of the total production in Virginia and North Carolina during the years 1920 and 1921, is the most ambitious effort to date in the Virginia-North Carolina section. About November 1, 1922, the exchange was reincorporated under the cooperative marketing act of Virginia, and its name was changed to "Peanut Growers' Association."

The organization is now a nonprofit, nonstock association, similar to many other cooperative growers' associations established during recent years. Each member was originally obligated to sell and deliver to the association all peanuts produced by or for him in the States of Virginia and North Carolina for a period of seven years, re-

PRICES F.O.B. VIRGINIA - NORTH CAROLINA SHIPPING POINTS  
OF SHELLED EXTRA LARGE AND NO.1 VIRGINIA TYPE PEANUTS  
NOV. 1920 - OCT. 1924

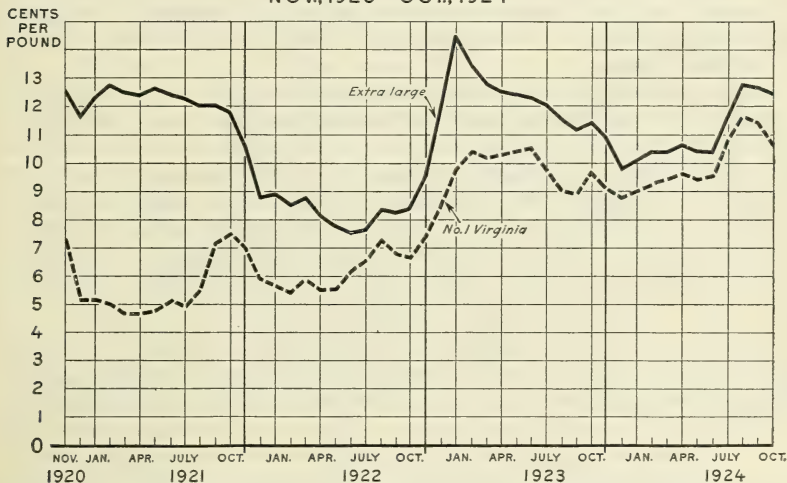


FIG. 7.—When large peanuts are scarce, the difference in price between shelled extra large and No. 1 Virginia-type peanuts is even more pronounced than between jumbos and fancies at the same time

serving for himself only the right to peanuts for home or farm use. The members agreed further to pay the association 2 cents for each pound of their peanuts sold through any other agency than the association as liquidated damages. The peanuts of members are delivered when and where the association may direct. They are graded and pooled with the goods of like variety, grade, and quality delivered by other growers. Upon delivery, an advance payment is made of about one-half the current market price. Final payment is not made until the end of the season, when all goods have been sold and all settlements made. The net proceeds are then divided among the members in proportion to their individual deliveries.

In 1921, the association stored for its members over 800,000 bags of farmers' goods. Late in the season it made arrangements with a Virginia cleaner to clean and shell part of its holdings, and entered the market as a competitor of the established Virginia-North Carolina

mills. A considerable part of these stored 1921 peanuts was finally sold as farmers' goods late in the following year.

For the 1922-23 season the association planned more extensive marketing operations, using different cleaning and shelling facilities and an increased administrative and selling force. One of its plans contemplated the selling of raw shelled Virginia peanuts in 1-pound lithographed cardboard cartons, two dozen packages to the case, to wholesale grocers and others for distribution to the consumer through the retail trade. The sale of these cartons was tried out chiefly in chain stores. A brand name and trade-mark were adopted and stamped on the bags and cartons of association peanuts. These were advertised and given some publicity by the association, but utilized a comparatively small portion of the crop. The larger portion of the 1922 crop was marketed in the summer and fall of 1923.

Considerable dissatisfaction was expressed by many members because their net returns had not been equal to the return of non-members, and in October, 1923, the association authorized its members to market one-half their 1923 crop outside the association if they so desired, but asked that the members state definitely how much they would deliver to the association. The same policy was followed for the 1924 crop.

During its early history, poor management and lack of experience in marketing peanuts proved severe handicaps to the association. Although organized to promote orderly marketing, it acted for several years chiefly as a "holding" company. Each season the growers' peanuts were held off the market in large measure until the close of the season in an effort to raise prices to a higher level, with the result that the period of active demand passed with many peanuts still unsold. Experienced marketing men are agreed that with semi-perishables, such as peanuts, orderly marketing involves placing a part of the crop on sale at regular intervals, in accordance with the demand, and neither rushing it to market all at once at the beginning of the season, nor withholding it from sale until demand for it has largely lessened.

#### THE GEORGIA PEANUT GROWERS COOPERATIVE ASSOCIATION

Early in 1923, some 6,000 peanut growers of Georgia united to form the Georgia Peanut Growers' Cooperative Association, having over 100,000 acres in peanut production. The "marketing agreement" signed by the members was based to a considerable extent on the contract of the older association in Virginia and North Carolina, but covered a period of five instead of seven years. Considerable effort was made during the year to induce the planting of good seed, proper cultural methods, and better harvesting, curing, and grading on the part of the members.

It was felt that the presence of the Georgia association in the field raised the general average of prices received for farmers' goods in Georgia. In 1924 the number of members had reached more than 8,000, with an acreage of over 150,000. The peanuts produced by members were sold to shellers. The first advance to members in 1924 amounted to 60 per cent or more of the current price, with the remainder to be spread over three other payments. Early in 1925 the association arranged with established plants to handle the shelling of their peanuts, and began offering shelled goods for sale.



## THE HUMPHREYS COUNTY PEANUT GROWERS ASSOCIATION

In the fall of 1923 about 140 peanut growers in Humphreys County, Tenn., organized to warehouse and sell their peanuts cooperatively. Each carload was considered a pool by itself, and each grower who contributed to it received the same price per grade. The overhead was taken care of by a deduction of 10 cents per bag. At the close of the season all funds in the treasury were prorated according to the number of bags sold through the association. In 1924 the membership had increased to 300, and the association handled about 50,000 bags of peanuts, bringing the growers between \$175,000 and \$200,000 in a little over three months.

Improved seed selection, definite standards of grading for farmers' goods, keeping the trash on the farm, improved warehousing facilities, ample financial assistance for members, more orderly flow of the crop to market, are a few of the ends which cooperative activity can be made to serve.

Whether operating as a cooperative association, or merely acting by mutual agreement, peanut producers should obtain a premium for their peanuts if a large number of growers in a community raise their standards at the same time. A peanut factory can not be expected, as a general principle, however, to pay higher prices for well-graded peanuts if they represent but a small part of the total quantity handled. Expenses of operation in the plant are not reduced by cleaning one or two small lots of good quality nuts. But if the factory can buy enough bright, clean, carefully graded farmers' goods to enable it to handle them exclusively for several days, its expenses of operation can be lessened, and a premium can be paid for the better product.

**SECONDARY DISTRIBUTION****OPERATION OF CLEANING AND SHELLING PLANTS**

As the Virginia-type peanuts come from the farm, they are of various sizes, often partly covered with dirt, and with more or less sticks, stones, and other foreign material in the bags. The machinery devised to remove the foreign matter and prepare the peanuts for the market is seldom exactly alike in any two establishments, partly owing to the secrecy which surrounds operations in most peanut plants. A mill may have machines in operation which have not been fully patented, and to prevent the details of such machinery coming to the attention of competitors, visitors are seldom admitted. In the better type of factory, much of the machinery is inclosed so far as possible to prevent excess dust, but most mills at present do not have these dust-eliminating features. The following description of the shelling and cleaning methods practiced in modern factories in the Virginia-North Carolina territory, written from the observation of representatives of the United States Department of Agriculture, with the assistance of leading Virginia cleaners, shows in a general way how the processes may be accomplished.

**CLEANING PROCESSES**

Peanuts as received from the farm are generally sacked in 4-bushel bags. Most cleaners prefer to store the farmers' goods in sacks in warehouses or in spaces not occupied by machinery on the floors of their plants; but a few cleaners have erected large elevators, with

bins for different varieties and different grades of these varieties, in which peanuts are stored in bulk. Outlets under these bins allow the peanuts to drop onto a broad belt which conveys them to the factory, where they are raised by cup elevators to the top floor of the plant. If the peanuts are stored in the factory in sacks, they are elevated to the floor on which the large hoppers are located and there begin the rather complicated journey through the cleaning and shelling machinery.

#### CLEANING OPERATIONS

From the hopper the peanuts pass into a sand and dirt reel which has small openings to allow dirt to drop through. By rubbing against each other in the reel, some of the soil in the little indentations in the hull of the peanuts is rubbed out and the pods acquire a slight polish. The reel also breaks off many stems.

#### STEMMING OPERATIONS

In some mills the next step is the stemming process, to remove little stems or roots which connected the pods to the vines and were not cut off when the plants went through the picking machinery. The principle somewhat resembles that involved in the ginning of cotton, and old cotton gins with dull teeth have at times been employed for stemming peanuts. Several types of stemmers are used. The preferred method employs a cylinder made by stringing iron pulleys on a shaft with a small space between each pulley. Below the cylinder are two or three rows of small saws so spaced on a shaft as to extend up into the spaces between the pulleys. These saws catch the stems of the peanuts and pull them off or cut them up so that a fan can remove them.

#### FANNING OPERATIONS

Fans and aspirators (fig. 8) are important machines in a cleaning plant, and are used all through the cleaning operations. The more fanning processes the peanuts go through, the less work is left to the laborers at the picking table later. A carefully regulated fan removes the light stems, chaff, empty pods and other non-edible material. This may be sold to near-by farmers for bedding or hog feed, and dairymen sometimes buy it for cattle feed. Light-weight pods, containing shriveled kernels, are later blown from the heavier-weight stock, because fancy or jumbo grades allow only small percentages of them. Some of these blown-out pods may be used in the extra or cheapest grade, or all may be shelled.

#### SEPARATING OR GRADING OPERATIONS

The grading or separating of peanuts in the shell into various sizes is usually done by a series of sloping, revolving cylinders made of metal bars fastened together. The spaces between these bars are adjusted to make the grades desired, as the peanuts are forced along the cylinders by gravity and the pressure of the other goods behind. The first operation is to take out the smallest of the nuts, which are either shelled or used in the extra grade. In the next step, the second size or fancy nuts fall through slightly wider slotted



openings, allowing the larger, jumbo peanuts to tail over the end of the cylinder. An idea of the relation between the sizes of the three grades can be obtained from Figure 9.

#### POWDERING OPERATIONS

The peanuts in a day's run at any plant may be grown on several widely different soils, and the pods often retain the color of the soil to a slight extent. Further, some pods become discolored by exposure to weather. To give them a clean, uniform appearance, the pods are run through polishing drums (fig. 10) containing a fine, white, dust-like mineral powder. After the pods and powder have tumbled around together, enough powder remains on the hulls to give them a fairly uniform color. Black or discolored spots on the pods are often partially covered by the powder.

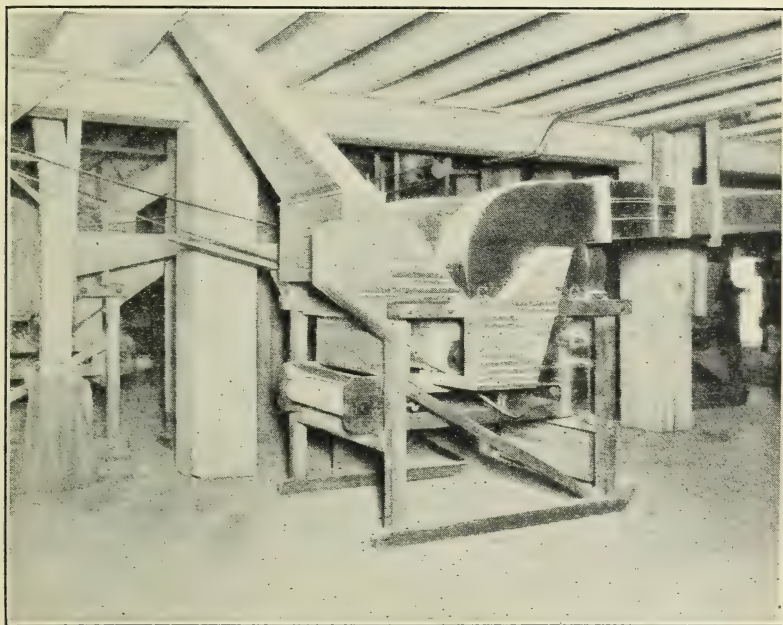


FIG. 8.—A suction fan in a cleaning plant. One of many fans scattered throughout the factory to draw out light weight pods, trash, and dust

#### HAND-PICKING

In most factories, hand-picking is the last step before bagging. The "picking tables" (fig. 11) consist of large revolving endless belts. Negro women are seated on either side to pick out badly discolored, misshapen or otherwise defective pods, the best of which are used in the extra grade. The final removal of foreign material also takes place at this stage, as upon leaving the picking tables the nuts drop through a shaft to the floor below for bagging.

Cleaned peanuts are usually sacked in burlap bags 68 or 70 inches in circumference by 40 inches high, and cut from cloth weighing  $7\frac{1}{2}$  to 8 ounces to the yard. It is often advised that the larger, stronger 70-inch size, of 8-ounce burlap, be made the standard. If smaller, lighter-weight sacks are used, they may tear in transit.

Old, patched, second-hand sacks are never desirable. The bags should be clean and strong, even if not new. The bags are sewed across the top (fig. 12) with strong twine, ears being left on either end. If the two edges of the bag are rolled over once or twice before being sewed, they stay more securely. An average bag of jumbo peanuts weighs about 91 pounds; most fancys run 101 to 106 pounds to the bag, averaging 104; and extras average around 93 pounds to the bag.

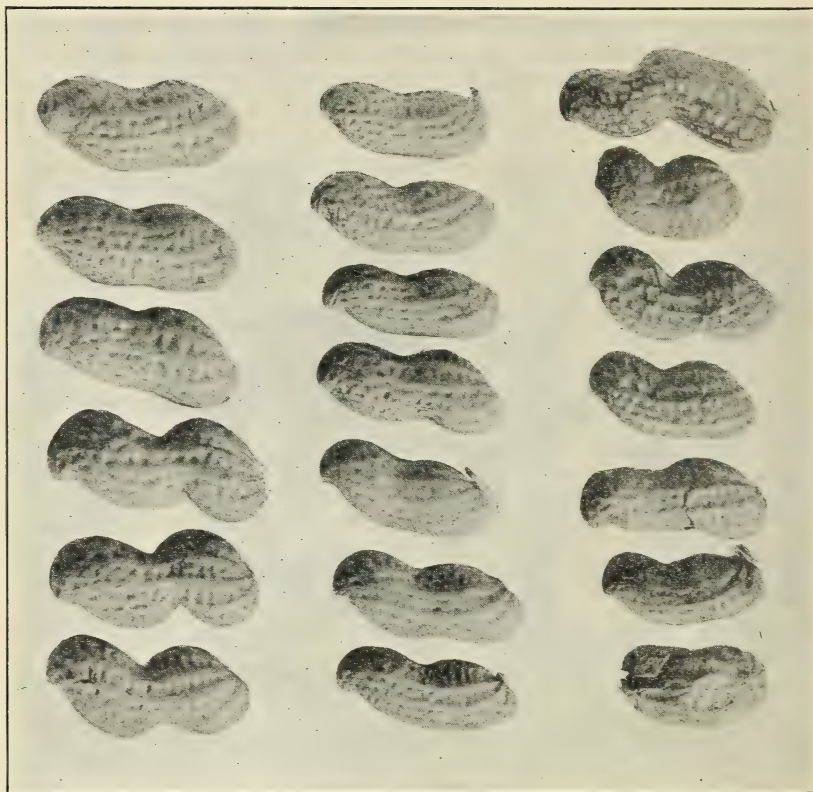


FIG. 9.—Grades of Virginia type peanuts in the shell. Peanuts in left-hand column are jumbos; those in the center, fancys; while those in the right-hand column, are extras. (Reduced one-third)

#### SHELLING PROCESSES

##### VIRGINIA-NORTH CAROLINA SECTION

Shelled Virginia peanuts are customarily made from the lower grades of farmers' goods. Such ill-shaped, badly discolored pods and blow-outs as are not placed in the extra grade, as well as some of the smaller-sized pods, are used for shelling. Cleaners who do not make an extra grade sometimes shell this class of goods. Occasionally, as happened during the summer of 1922, shelled Virginias may command a sufficient premium over cleaned stock to warrant shelling large quantities of farmers' goods straight. All grades of Spanish type peanuts are shelled, as Spanish peanuts are not sold in the shell.



Shelling operations are seldom so numerous or so complicated as those required to prepare goods in the shell for bagging. The cleaning is often limited to running the pods through a stoner, dirt reel, and fan. The stoner is a shaft in which the nuts fall into a strong current of air traveling upwards, which lifts the nuts and light trash, but allows the stones, pieces of metal, and other heavy substances to drop into a receptacle on a lower floor. The stoner is chiefly employed in shelling Spanish, and only rarely for peanuts of the Virginia type.

In the shelling machinery the pods are broken by forcing them between two cylinders, the outer one of which is stationary. To

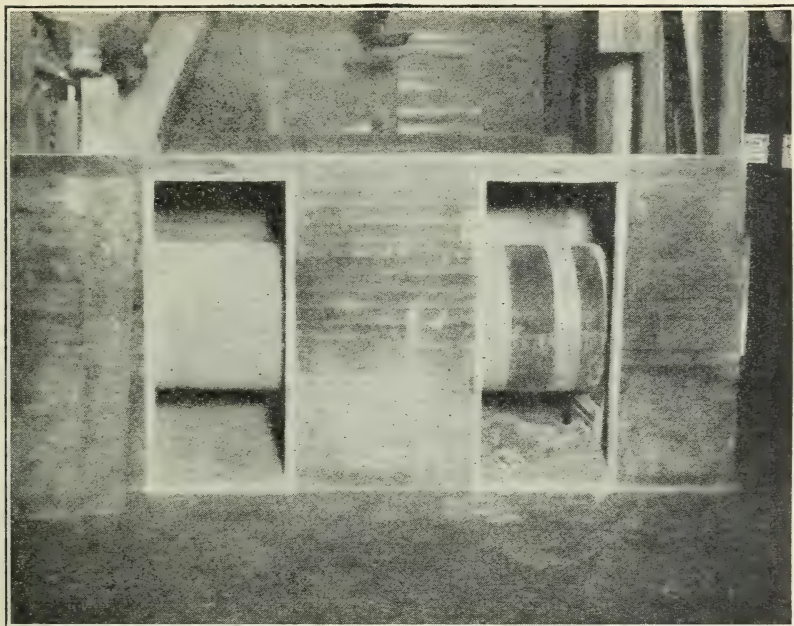


FIG. 10.—“Tumbler” in which peanuts receive a coating of fine white powder before being graded and sacked. Peanuts enter revolving cylinder at left-hand portion of picture and leave at right-hand end. Surplus powder has fallen through wire mesh to floor in right-hand portion of picture

the inner, revolving cylinder are attached two steel “beaters,” which strike and crack the hulls of the nuts. The broken pods and the meats which have fallen out are then carried to a shaft in which an upward current of air removes the hulls and light trash. In some plants this nonedible material is blown directly into the firebox in the engine room. Three tons of hulls and other trash are considered equal to 1 ton of coal as a fuel, and hulls are frequently disposed of in this way.

The shelled meats fall through the air suction and are separated into several sizes by means of perforated screens. An air current blows away most of the small ends of unshelled peanuts, called nubs, which have come through the openings in the screen with the No. 1 nuts. A few remaining unshelled peanuts, together with badly shriveled, broken, or moldy nuts, are picked out by hand as the nuts pass in a thin layer over picking tables similar to those employed

for unshelled peanuts. The meats then fall over the end of the belt conveyor into spouts, ready for bagging. Burlap of 10-ounce grade and 44-inch size is sometimes used for the sacks, but cloth 40 by 45 inches and weighing  $10\frac{1}{2}$  to 11 ounces to the yard is considered preferable. New, clean sacks are even more important than for unshelled nuts. When packed in 45-inch bags, shelled Virginias average around 113 pounds to the bag for extra large, 115 pounds for No. 1, and 107 pounds for No. 2 grade.

The perforations in the shelling screens in factories handling Virginia-type nuts are of such a size that only No. 1 grade nuts or smaller pass through. The extra large grade tails over the end of the screen and is carried to another picking table, where even more



FIG. 11.—Working at picking tables in peanut factory in Virginia. Suction pipes are at end of long belts to draw out chaff and dust

care is taken than with the No. 1 grade to remove undesirable matter as the meats pass to the bagging spout.

Meats screening out as No. 2 grade, when destined for the candy, peanut-butter or baking trades, also pass over picking tables to have discolored, moldy, or otherwise imperfect nuts removed by hand. Hand picking is unnecessary when the No. 2 meats are going into oil stock. The immature nuts, known as pegs or No. 3, together with screenings and the small, shriveled, broken, and moldy nuts picked from the better grades, and some small sticks, stems, and other foreign matter which has been picked or screened out, are usually sold to oil mills for crushing. Figure 13 shows samples of the oil stock at Virginia plants. The three grades of shelled Virginias are pictured in Figure 14.



## SOUTHEAST AND SOUTHWEST

Shelling plants in the southern tier of States clean peanuts only to prepare them for the sheller, and therefore do not need to size the pods as is done with the Virginia-type peanuts. Accordingly, factories in the South do not handle their peanuts as many times, and less machinery is needed.

A few plants in the South do not reclean their peanuts before shelling. As a consequence their finished products carry a heavier percentage of foreign material than is desirable, and their No. 2 grades are not so bright and clean as they should be, because of the greater quantity of dirt and dust which finds its way into the machinery and adheres to the faces of the split nuts.

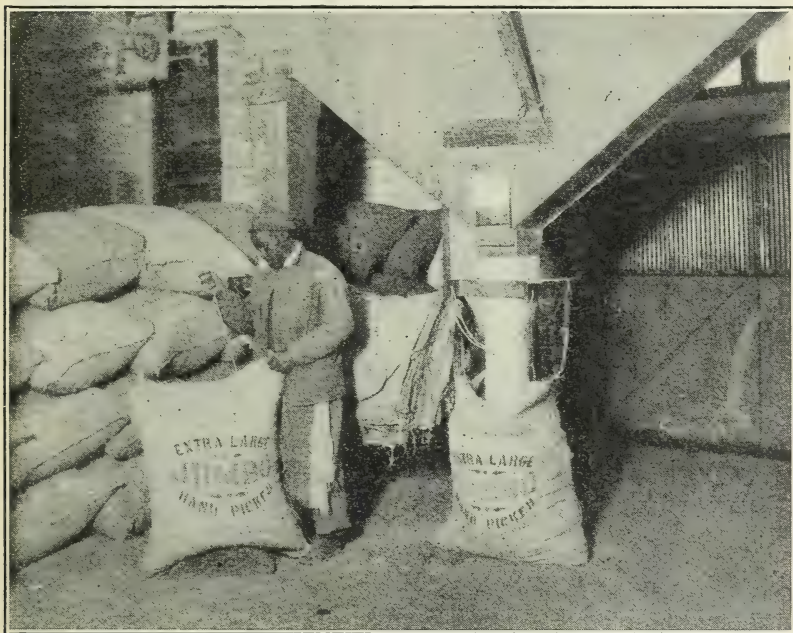


FIG. 12.—Sewing a filled sack of peanuts in the shell—the last step before the peanuts are ready to ship. The peanuts come through the bagging spout from a picking table shown in Figure 11

In the Southeastern States no uniformity exists in the size of the bags used in sacking. Most shellers prefer the sack holding about 120 pounds of shelled Spanish peanuts; some use the 100-pound sack; and a number of shellers ship in a bag holding around 125 pounds. Shippers packing in the 40 by 45 inch, 10½-ounce sack say that the weight of the filled sacks averages 120 to 127 pounds for No. 1 Spanish, and 114 to 120 pounds for No. 2 Spanish.

Oil stock in the Southeast consists mostly of screenings, except when farmers' stock is crushed straight, with none of it shelled. Samples of representative oil stock from Georgia shelling plants are seen in Figure 15.

Runners for shelling are handled in much the same way in the Southeast as are Spanish. When prices of shelled goods are low, a larger proportion of Runners is crushed for oil or fed to hogs than of

Spanish, especially when the pods do not fill out well and grading is difficult or the stock is otherwise of poor quality.

#### GRADES FOR VIRGINIA-TYPE PEANUTS

Formerly the grades for Virginia-type peanuts were vague and indefinite. The grades for cleaned peanuts were especially ill-defined, with no uniformity in either count or minimum size specifications. Each shipper made his own standards, and there was a wide range

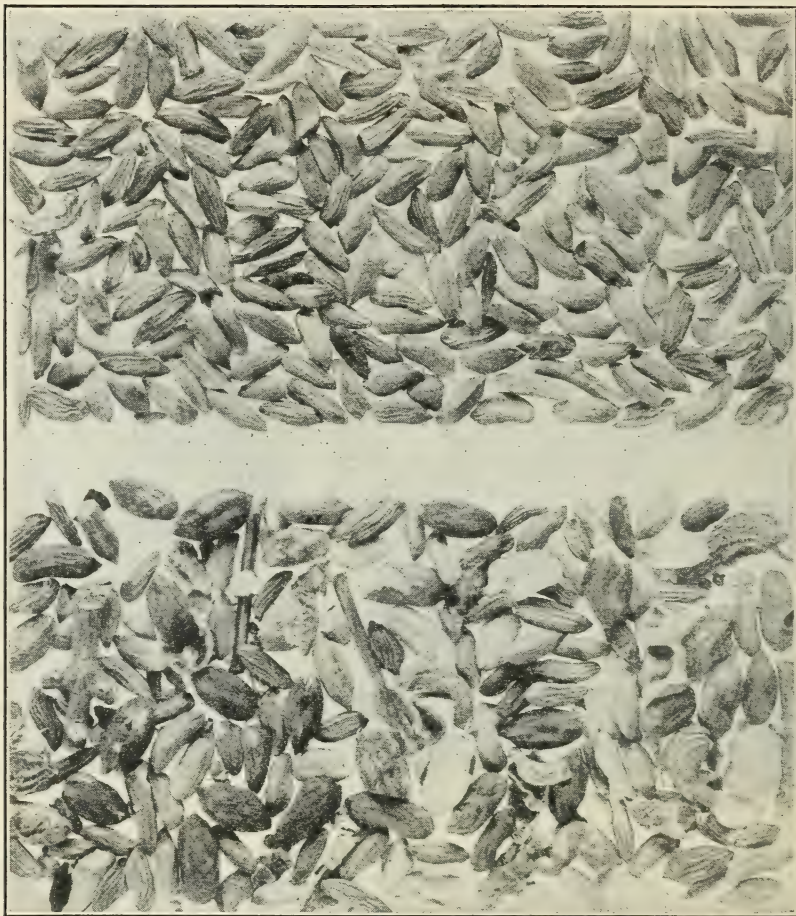


FIG. 13.—Different lots of oil stock from plants running Virginia-type peanuts. (Reduced one-third)

in the same grade as put out by different cleaners. On December 13, 1921, however, the National Peanut Cleaners and Shellers Association<sup>11</sup> adopted grades for use by its members throughout the Virginia-North Carolina territory, which specified the varieties to be included, the count per pound, percentages of unsound nuts and foreign matter permitted, and other factors.

<sup>11</sup> National Peanut Cleaners and Shellers Association. Conditions of purchase and sale [effective December 13, 1921]. 8 pp. Suffolk, Va. 1922.



Virginia-type peanuts in the shell are sold as jumbos, fancys, and extras. The chief difference between jumbos and fancys is that the count per pound for jumbos shall not exceed 200 per pound as against 240 for fancys. Extras consist principally of nuts blown out, picked out, or screened out when making jumbos and fancys. They are not permitted to weigh less than 85 pounds to the 70-inch bag, and the count per pound can not be more than 320.



FIG. 14.—Three grades of shelled Virginia peanuts: Extra large (at the upper left), No. 1 (at the upper right), and No. 2 (below). (Reduced one-third)

Shelled Virginias come on the market as extra large, No. 1 and No. 2. According to the rules of the association, extra large must not contain less than 528 to the pound, or 33 to the ounce, and the count for No. 1 can not exceed 675 to the pound, or slightly more than 42 to the ounce. The specifications for unsound nuts, foreign matter, and splits for the two grades are much the same. No. 2 peanuts contain shrivels in addition to splits, although the rules specify that not more than 5 per cent of No. 2 peanuts shall pass through a 16/64 round screen. During the 1924-25 season, No. 2 Virginias consisted principally of shrivels.



Many members of the trade have felt that the specifications in the rules of the National Shellers and Cleaners Association are not sufficiently definite, and such liberal tolerances are provided that buyers still purchase largely by brand name and on the shipper's reputation rather than by grade.

Owing to the scarcity of large-sized nuts during recent years, and to the increasing demand by salting interests for large shelled Vir-

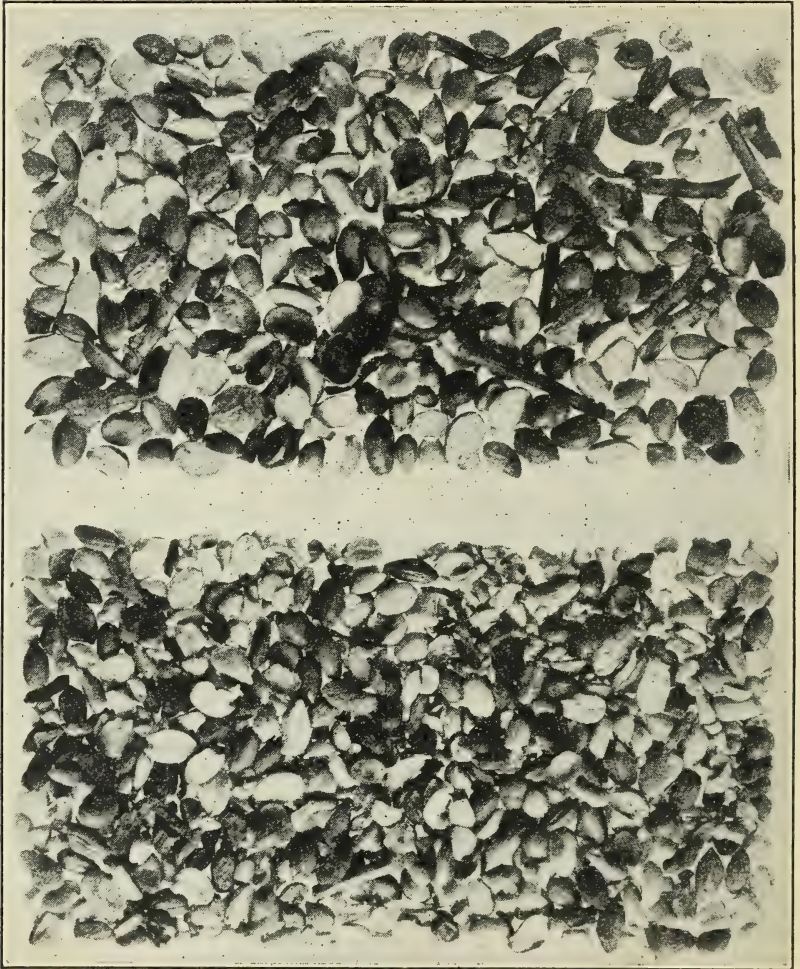


FIG. 15.—Different lots of oil stock from plants running shelled Spanish peanuts. (Reduced one-third)

ginias, some shellers have occasionally lowered the count for their extra large Virginia grade, and while some shipments of extra large will run 30 to 32 to the ounce, other lots have been seen which graded 34 to 36 to the ounce instead of 33 as prescribed in the rules. This lowering of the standard has been particularly unfortunate because of the recent stiff competition which Virginias have had to meet from oriental peanuts. Large quantities of the 28 to 30 and 30 to 32 to

the ounce sizes have been received in recent years from China. They compete with the extra large Virginias, which are slightly smaller in size than the orientals even if domestic factories maintain the prescribed size minimum. If plants shelling domestic peanuts should lower their grades, the salters would no doubt be that much more interested in orientals. No. 1 Virginias, which usually count out from 40 to 42 to the ounce, but at times run as small as 48 to the ounce, must compete with the 38 to 40 size of orientals. The present tariff seems to be keeping out the smaller-sized Asiatic peanuts to a large extent, but American shellers probably will continue to experience competition from the larger sizes of imported nuts.

#### FEDERAL GRADES FOR SPANISH AND RUNNER TYPES OF PEANUTS

The grades for Spanish-type peanuts were formerly almost as indefinite as those for the Virginia-type nut. Increased agitation for definite, well-established grades, especially in the Southeast and Southwest, however, resulted in detailed investigations in both producing and consuming centers, and in the fall of 1921 the Bureau of Agricultural Economics of the Department of Agriculture, offered carefully considered tentative grades for shelled White Spanish peanuts. These grades, revised to September 1, 1925,<sup>12</sup> follow:

*U. S. No. 1* shall consist of shelled White Spanish peanuts which are whole and free from small shriveled, noticeably discolored, unshelled or damaged peanuts, and from foreign material.

In order to allow for variations incident to proper grading and handling, not more than 1 per cent, by weight, may consist of other varieties of peanuts; not more than 2 per cent, by weight, of split or broken kernels; not more than 2 per cent, by weight, of small shriveled peanuts; not more than  $\frac{3}{4}$  per cent, by weight, of unshelled or damaged peanuts; not more than  $\frac{1}{4}$  per cent, by weight, of foreign material; not more than  $1\frac{1}{4}$  per cent, by weight, may consist of peanuts with noticeably discolored skins which are otherwise of *U. S. No. 1* grade, but of this amount not more than  $\frac{1}{5}$  ( $\frac{1}{4}$  per cent) may be badly discolored.

*U. S. No. 2* shall consist of shelled White Spanish peanuts which may be split or broken, but which are free from small shriveled, unshelled or damaged peanuts, small pieces of peanuts, and from foreign material.

In order to allow for variations incident to proper grading and handling, not more than 1 per cent, by weight, may consist of other varieties of peanuts; not more than 6 per cent, by weight, of small pieces of peanuts or small shriveled peanuts; not more than  $1\frac{1}{2}$  per cent, by weight, of unshelled or damaged peanuts; and not more than  $\frac{1}{4}$  per cent, by weight, of foreign material.

#### DEFINITIONS OF GRADE TERMS

1. "Small shriveled" peanuts in *U. S. No. 1* means peanuts which are shriveled and which will pass through a screen of the type customarily in use, having  $\frac{1}{8}$  inch by  $\frac{3}{4}$  inch perforations; and in *U. S. No. 2*, peanuts which are shriveled and which will pass through a screen of the type customarily in use, having  $\frac{1}{8}$ -inch round perforations.

2. "Small pieces of peanuts" means portions of peanuts which will pass through a screen of the type customarily in use, having  $\frac{1}{8}$ -inch round perforations.

3. "Foreign material" means sticks, stones, dirt, shells, portions of vines, or any material other than peanut kernels.

4. "Split peanuts" means the separated halves of the peanut kernel.

5. "Damaged peanuts" means—

(a) Peanuts which are rancid or decayed to an extent visible externally.

(b) Moldy peanuts.

(c) Peanuts showing sprouts over  $\frac{1}{8}$ -inch long. However, all sprouted peanuts the separated halves of which show decay shall be classed as damaged.

<sup>12</sup> See footnote 9, p. 17.



- (d) Dirty peanuts where the surface is distinctly dirty and the dirt ground in. This condition usually results when peanuts are rubbed in the machinery in the process of handling.
- (e) Wormy or worm-injured peanuts. Peanuts which show only slight and superficial worm injury with no frass around the injury shall not be considered as damaged.
- (f) Peanuts shall not be considered as damaged which show a light yellow color or a slight yellow pitting of the flesh.

6. "Noticeably discolored skins." Peanuts which show dark brown discoloration, usually netted and irregular, affecting more than 25 per cent of the skin, shall be classed as noticeably discolored. Peanuts which are paler or darker in color than is usually characteristic of the variety, but which are not actually discolored, shall not be classed as noticeably discolored.

7. "Badly discolored skins." Peanuts which show bluish or black discoloration, affecting an area in excess of one-half the surface in the aggregate, shall be classed as badly discolored.

Actual screening of numerous samples of peanuts, taken from many different shipments, has shown that in years of ordinary crop conditions most commercially acceptable lots of Spanish peanuts come within the above grades. If reasonable care is exercised in running the peanut-shelling and screening machinery at proper speed, and in picking out undesirable material as the shelled product passes along the picking tables, shellers will have little difficulty in meeting the requirements of the Federal grades. Figure 16 shows samples of U. S. No. 1 and U. S. No. 2 taken from commercial lots that are superior to the minimum requirements of these grades.

The grades met with immediate commendation from many large shelling interests in the Southeast. They have been adopted by the Southeastern Peanut Association and the majority of the sales of shelled Spanish in the United States are now made on the basis of these grades.

The increasing use of shelled Runners as a substitute for shelled Virginias in making peanut butter and peanut candy resulted in many requests for United States grades for Runners. Accordingly, after a careful investigation the Bureau of Agricultural Economics of the Department of Agriculture, offered on January 8, 1925, United States grades for shelled Runner peanuts. These grades, revised to September 1, 1925,<sup>13</sup> follow:

*U. S. No. 1* shall consist of shelled Runner peanuts which are whole and free from small shriveled, unshelled or damaged peanuts and from foreign material.

In order to allow for variations incident to proper grading and handling, not more than 1 per cent, by weight, may consist of other varieties of peanuts; not more than 3 per cent, by weight, of split or broken kernels; not more than 2 per cent, by weight, of small shriveled peanuts; not more than  $1\frac{1}{4}$  per cent, by weight, of unshelled or damaged peanuts; and not more than  $\frac{1}{4}$  per cent, by weight, of foreign material.

*U. S. No. 2* shall consist of shelled Runner peanuts which may be split or broken, but which are free from small shriveled, unshelled, or damaged peanuts, small pieces of peanuts, and from foreign material.

In order to allow for variations incident to proper grading and handling, not more than 1 per cent, by weight, may consist of other varieties; not more than 6 per cent, by weight, of small pieces of peanuts or small shriveled peanuts; not more than  $1\frac{1}{2}$  per cent, by weight, of unshelled or damaged peanuts; and not more than  $\frac{1}{4}$  per cent, by weight, of foreign material.

The definitions of grade terms agree exactly with those given for shelled Spanish, except that discolored skins are not mentioned.

Figure 17 shows samples of U. S. No. 1 and U. S. No. 2 grades of shelled Runners.

<sup>13</sup> See footnote 9, p. 17.



## FEDERAL INSPECTION OF SHELLED SPANISH AND RUNNER PEANUTS

At the request of the Southeastern Peanut Association, the Federal Food Products Inspection Service has been made available to the peanut industry for shelled Spanish and Runners. Inspections can be obtained at Atlanta, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Columbus, Detroit, Indianapolis, Kansas City, Los Angeles, Memphis, Milwaukee, Minneapolis, New York, Norfolk, Omaha, Philadelphia, Pittsburgh, Portland, Oreg., St. Louis, San Francisco,

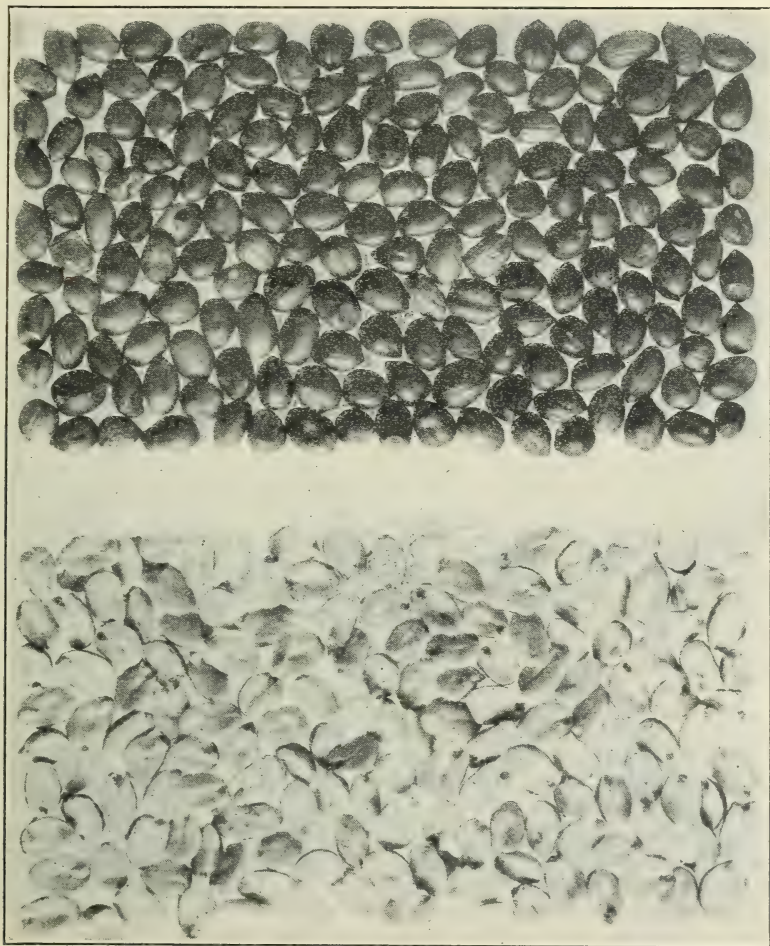


FIG. 16.—Shelled Spanish—U. S. No. 1 (upper) and U. S. No. 2 (lower). (Reduced one-third)

and Washington, where the local inspectors of the fruit and vegetable service of the United States Department of Agriculture are equipped with peanut screens and scales, and at any point near one of these markets to the extent permitted by the time of the nearest inspector. Federal inspectors at other points can collect samples, but must forward them for inspection to the nearest office equipped with screens.

Upon request<sup>14</sup> from any interested party, including the shipper, the transportation company, or the receiver, a trained Government inspector will visit the car of peanuts in question before it has been unloaded. Samples are taken from enough different bags to enable him to get a number of pounds fairly representative of all the peanuts in the car. This composite sample is screened with hand screens, and a certificate prepared from the result, stating in detail the percentages of split or broken kernels, small shriveled peanuts, un-

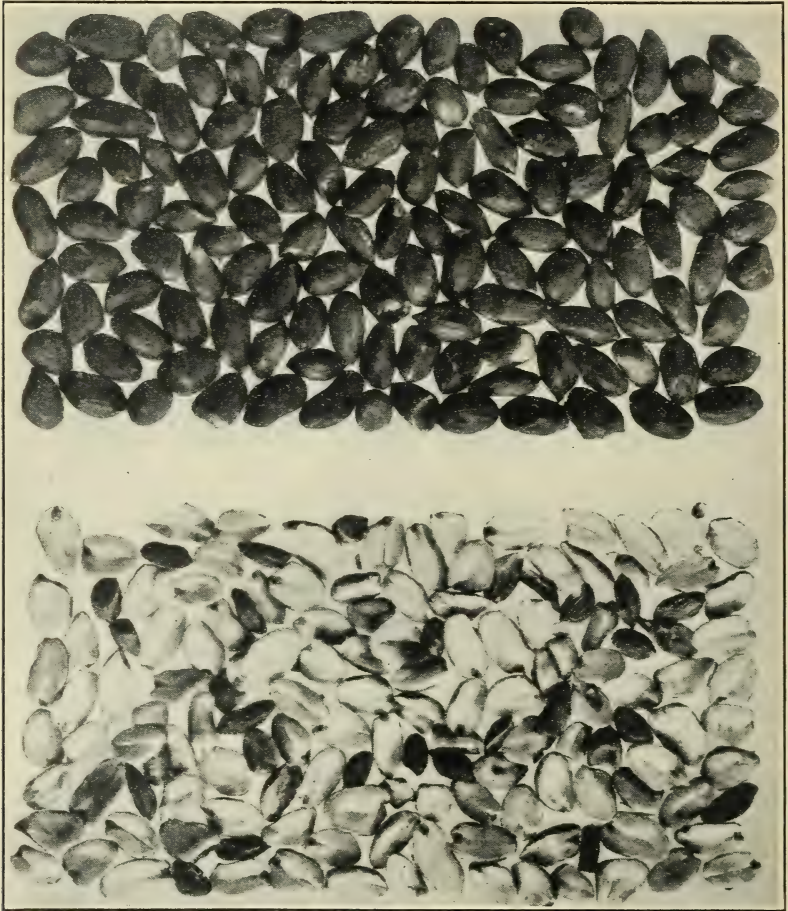


FIG. 17.—Shelled Runners—U. S. No. 1 (upper) and U. S. No. 2 (lower). (Reduced one-third)

shelled, damaged or moldy peanuts, and foreign material, and whether the lot comes within the provisions of the United States grade specifications. A moderate fee is charged for this service. These Federal inspection certificates are accepted in all United States courts as prima facie evidence of the condition of the goods, and by their means many disputes may be settled out of court which might otherwise require costly arbitration or lawsuits.

<sup>14</sup> In most cities the Federal inspector will be found in the telephone book listed under "U. S. Department of Agriculture—Fruit and Vegetable Inspection" or "Food Products Inspection."



Inspections are occasionally requested on shelled Virginia-type peanuts. As no Federal grades have been formulated for Virginias, the certificates covering inspections on them are largely restricted to a description of size, maturity, appearance, and percentages of stock damaged by mold or weevil injury, of split and broken kernels, unshelled peanuts, and foreign material.

#### SETTLEMENT OF DISPUTES

##### IN VIRGINIA-NORTH CAROLINA SECTION

When a dispute arises concerning the quality of Virginia-type peanuts, the usual method of settlement is to refer it to an arbitration committee. The National Peanut Cleaners and Shellers Association formerly provided in its rules that in the event of disagreement between buyer and seller in regard to the quality of peanuts delivered on contract, on the request of either party samples should be drawn in the presence of representatives of the buyer and the seller and forwarded to the secretary of the association. The secretary was to transmit the samples promptly to the adjustment committee, consisting of three members, who were to determine whether or not they conformed to the standard of the association. The decision of the arbitration, or adjustment committee, was final and binding on both buyer and seller. If the committee decided that the peanuts were below standard in quality, at the request of either party it might determine what allowance per pound should be made.<sup>15</sup>

In a decree entered June 15, 1925, however, the Federal court at Norfolk enjoined the National Shellers and Cleaners Association from settling disputes in this way. The adjustment and arbitration of disputes of any character between sellers and purchasers, it stated, should be handled by reference to a board of arbitration consisting of three members, empowered to promulgate rules of procedure and to render final awards. One arbitrator was to be selected by the seller, one by the purchaser, and the third, or umpire, was to be chosen by the other two. The decision of a majority of the arbitrators was to be binding upon both buyer and seller. Arbitration, however, was to be optional with the purchaser.<sup>16</sup>

##### IN SOUTHEASTERN SECTION

Spanish peanuts from the Southeast were formerly arbitrated at the receiving rather than at the shipping end, through an arbitration committee in each of the principal markets consisting of three members and three alternates, all selected from men in that market familiar with peanuts. The rules of the Southeastern Peanut Association, adopted August 1, 1923, however, changed this in favor of one arbitration committee of five members, appointed by the president, to meet at Atlanta, Ga., if needed, to decide questions arising in regard to filling contracts, disputed weights, and the like. Questions relating to grade are referred to the United States food products inspector at the receiving point, whose sampling and grading decisions are binding upon both buyer and seller. At points where no inspector is available, samples are drawn by representatives of both buyer and seller, and

<sup>15</sup> Paraphrased from National Peanut Cleaners and Shellers Association. Conditions of purchase and sale [effective December 13, 1921]. 8 pp. Suffolk, Va. 1922.

<sup>16</sup> Paraphrased from United States of America, petitioner *v.* the National Peanut Cleaners and Shellers Association et al. U. S. District court, Eastern District of Virginia, final decree (entered June 15, 1925). 12 pp. 1925. (In Equity, No. 109.)



may be referred to the arbitration committee in Atlanta but are usually sent to the nearest Federal inspector for decision as to grade.

No. 1 shelled Spanish peanuts shipped by members of the Southeastern Peanut Association not coming up to contract quality are still considered of good delivery and not rejectable if containing not over double the percentages of splits, shrivels, foreign material, damaged, moldy, and unshelled nuts and other varieties allowed in the grades. But it is agreed that the contract price shall be reduced for each 1 per cent, and proportionately for each fraction of 1 per cent in excess of the grades stipulated as follows: One-half per cent for each excess 1 per cent in splits; 14 per cent for each excess 1 per cent in foreign material;  $\frac{1}{2}$  per cent for each excess 1 per cent in other varieties;  $\frac{3}{4}$  per cent for each excess 1 per cent in shrivels. Unshelled, damaged, and moldy nuts between  $\frac{3}{4}$  per cent and 1 per cent are subject to a deduction in price at the rate of 3 per cent of the contract terms for each 1 per cent in excess. For any moldy, damaged, or unshelled nuts above 1 per cent, however, the contract price is reduced at the rate of 7 per cent for each 1 per cent excess. Good delivery of noticeably discolored peanuts is given as 2 per cent, of which  $\frac{1}{2}$  per cent may be badly discolored. Noticeably discolored peanuts above  $1\frac{1}{4}$  per cent, however, are penalized at the rate of 1 per cent of the contract price for each 1 per cent in excess. Any excess badly discolored peanuts are subject to a reduction of 2 per cent of the contract price for each 1 per cent of excess. The association rules also provide penalties for shipments of No. 2 Spanish and shelled Runners which do not come up to grade specifications.

Should the whole or any portion of a shipment of shelled peanuts not equal in quality the contract grade within the variations allowed, it may be rejected by the buyer within 48 hours after delivery. The seller may replace a rejected shipment within the contract period, or if that has expired, within five working days after telegraphic notice of rejection. If the seller fails to declare his intention to replace the rejected shipment within 48 hours, the buyer may cancel the contract, or buy, for the account of the original sheller, stock equivalent to the rejected quantity through a broker member of the association between 24 and 48 hours after the seller has been wired of this intention.<sup>17</sup>

Not unnaturally, the shipper often formerly felt that when city brokers or receivers served on the arbitration boards of the association it was difficult to have an entirely impartial committee; and unpleasantness has at times arisen on this score. The availability of an impartial inspection by Government representatives, when disputes arise over the grades of shelled Spanish peanuts arriving in the market, has already had a wholesome effect on the peanut industry.

#### METHODS OF DISPOSING OF SHELLED AND CLEANED PEANUTS

Peanuts are usually sold by southern cleaners and shellers in one of three ways: (1) Direct to the purchaser, usually by wire; (2) through a broker at the shipping point or at the city market, both often being employed in one sale; or, more rarely, (3) by a traveling representative of the shipper. Occasionally large city brokers make trips through the peanut belts of the South, and place orders in person for their clients.

<sup>17</sup> Paraphrased from Southeastern Peanut Association. Rules Southeastern peanut association [effective September 1, 1925]. Atlanta, Ga. 1925.

Possibly half the peanut sales in larger city markets are made through brokers who represent the cleaners and shellers. These representatives may carry the accounts of one or more large cleaners or shellers, and supply wholesale confectioners, bakery-supply houses, peanut-butter manufacturers, salters, and wholesale grocers, as well as jobbers. The purchases may be made direct from the cleaner or sheller in the South, or through a broker in one of the more important shipping centers, who often represents a considerable number of plants.

There is no uniformity in the method of purchase. One broker, two, or none, may figure in the sale. In some cities brokers handle the bulk of the transactions; in others, the large buyers prefer to purchase directly from the southern cleaner or sheller without dealing through a middleman. An occasional large shipper in the South deals only with the purchaser direct, claiming in this way to curtail expenses. The brokerage charge of 2 per cent may be split between the brokerage firms in the South and at the receiving market if both are involved in a transaction. This fee is paid by the offering broker's principal rather than by the receiver. Thus the prices which are quoted to the latter are strictly net.

Formerly the sale of peanuts was largely confined to car-lot quantities. A car lot of shelled Spanish or Runner peanuts usually weighs about 30,000 pounds, a car lot of shelled Virginias about 28,000 pounds, and a car lot of peanuts in the shell about 25,000 pounds. Increased competition and the tendency of many firms to buy on a "hand-to-mouth" basis, has caused practically all shippers and brokers, especially in the Virginia-North Carolina section and the Southwest, to accept orders in smaller lots. In Virginia and North Carolina, although the bulk of the peanut business continues to be handled in car lots, small-lot shipments are numerous and constitute a much greater proportion of the total movement than in the past. Shipments from most towns in the Southeastern States are still almost entirely confined to car-lot quantities. Frequently a city broker sells several less-than-car-lot orders for one firm to be shipped in what is known as a "pool car." As car-lot freight rates are always cheaper than less-car-lot rates, a saving in freight charges is thus effected.

During the spring of 1922 a number of cars of cleaned Virginias were sold at auction in New York City. Most of the purchases were made by retailers who ordinarily buy from the large receivers. The experiment aroused some ill feeling, both among the regular receivers in New York and among many Virginia shippers, and no further sales of peanuts by auction have been made.

#### PEANUTS IN CITY STORAGES

Peanuts in the shell can be stored for a considerable period of time in the dealers' storerooms or in ordinary dry-storage warehouses, without danger of deterioration or apparent loss of quality, except that the skin adheres more tightly and the color grows darker. Accordingly, peanuts in the shell are generally stored in common storages.<sup>18</sup>

<sup>18</sup> Experiments are now under way by the Department of Agriculture to determine the storage life of different varieties of peanuts at various temperatures in cold and common storages.



Shelled peanuts, however, are subject to "weevil" attack when in ordinary storage, especially during the warm months, and should be kept in cold storage from at least June 1 to late fall. The "weevils" may be the larvæ of the Mediterranean flour moth or of the Indian meal moth. They not only cause damage by eating the peanuts, but the frass is objectionable and the worms of the former moth spin quantities of silk which mats the materials together, thus making them worthless.<sup>19</sup> Shelled peanuts are usually stored at a temperature of 30 to 32°, although some warehouses carry them at 34 to 36°, or even higher temperatures.

Chicago is by far the leading cold-storage center and during the height of the season from 15 to 20 million pounds of peanuts are kept in storages in that city by merchandizing brokers, dealers, and peanut-products manufacturers. Boston, Cleveland, Pittsburgh, and Cincinnati are among other large centers in which considerable quantities of peanuts are often kept in storage. The storage holdings of local firms in consuming centers are often added to by the practice of some southern firms of shipping carloads of peanuts to themselves at these points, or to their city brokers, in advance of actual orders. Deliveries are then made as the trade calls for them.

Storage rates vary widely, according to the section of the country. In Chicago leading storage concerns have recently charged 10 to 12 cents per 100 pounds for shelled peanuts for the first month and 7 to 8 cents per 100 pounds for succeeding months. For peanuts in the shell, 12 to 15 cents per 100 pounds has been the usual rate for the first month, and 7 to 10 cents per 100 pounds for each month thereafter.

Loans on peanuts stored with them are made by most storage firms. The amount of the advance varies with different storage houses. From 60 to 75 per cent of the market value of the peanuts at the time stored will usually be granted, and advances up to 80 to 90 per cent of the value have at times been made.

#### BASES OF SALE

Sales may be made for immediate shipment from the southern point, or for shipment at any time during the following 60 days. Most sales are for shipment within 30 days of the date of the order. Quotations for deferred shipments are occasionally a fraction of a cent over the prices quoted for immediate shipment. Most quotations from southern shippers are on an "f. o. b. shipping point" basis, but in some producing sections the delivered basis is used when quoting to coast cities like Boston, New York, and Philadelphia, owing to the competition of low water rates with freight rates. Brokers in most consuming centers also quote on an f. o. b. shipping point basis, although firms in a few cities sell on a "delivered" basis, with transportation charges included.

To an increasing extent brokers in city markets have become merchandizing brokers. Many brokers in the large cities carry stocks in warehouses, and are thus able to make immediate deliveries of rush orders. For this service the broker will endeavor to get for his goods from  $\frac{1}{8}$  cent to  $\frac{1}{4}$  cent per pound over quotations pre-

<sup>19</sup> For further information concerning the weevils and remedial measures for controlling them see U. S. Bureau of Entomology Circular 142, The Indian-Meal Moth and "Weevil-Cut" Peanuts, by C. H. Popenoe.

vailing in the South on that day, plus freight charges to his city. This method of purchasing is more expensive to the consignee than buying direct from the mill in car lots; yet when the market appears weak the trade is often willing to pay a higher price for a few sacks of peanuts, rather than buy heavily on an unsettled market.

#### TERMS GOVERNING SALES BY CLEANERS AND SHELLERS

Peanuts in the Virginia-North Carolina district were formerly sold by cleaners and shellers on the basis of cash in 30 days less 1 per cent for cash in 10 days from date of invoice. In recent years when, because of high prices, a large volume of money would be tied up in accounts by the 30-day credit plan, the basis on open billings has been changed to net cash in 10 days. Another strong reason for this change was that many purchasers would wait the full 30 days and then send in the remittance less 1 per cent, causing considerable correspondence in straightening out accounts. No discount is now allowed for cash by most of the cleaners.

Several of the cleaners have endeavored to insist that their bills always be honored within 10 days of the date of the invoice, but with only partial success. The shipper, having sold the peanuts f. o. b. shipping point, disclaims further responsibility after the transportation company has receipted for the shipment, and expects payment within the time specified. A long-distance shipment, however, is often over 10 days on the road, and the buyer sometimes prefers to defer payment until he has an opportunity to inspect the goods. If the shipment does not come up to the contract specifications he may deduct from his bill the adjustment amount agreed upon before remitting payment. This throws upon the shipper the burden of collecting any railroad claim that may be filed.

Fully three-quarters of the shipments from the Virginia-North Carolina territory are billed "open," on straight bills of lading, on terms of net cash in 10 days. The remainder of the shipments are made on order bills of lading, on terms of net cash demand draft with bill of lading attached. In such cases the purchaser must pay the draft, which is for the amount of the invoice, at the bank, before he can obtain the bill of lading which entitles him to the possession of the car. Frequently banks allow the shipper to take credit for all or a portion of the invoice value of the shipment against which a draft has been drawn, which assists him in financing his business.

Many shellers in the southeastern and southwestern sections, who had become accustomed, through their cottonseed oil activities, to sell on the "usual terms" basis of draft attached to the bill of lading and payable on the arrival of the goods, have preferred to sell peanuts in the same way. Although their regular credit terms would appear less liberal than are those extended by Virginia-North Carolina shippers, more lenient terms are sometimes allowed. Few shipments from the Southeast are billed "open" on straight bills of lading.

#### CAR LOADING AND TRANSPORTATION

The quality of the peanut is not likely to be adversely affected while in transit. Its high oil content insures it against freezing injury in winter, and its composition is such that it does not readily deteriorate in warm weather. Thus the use of box cars instead of



refrigerators or ventilated cars is possible and general. Apart from the fact that weevils may increase rapidly in shelled peanuts in the summer, there is no particular need for fast freight, which is another reason why the use of box cars and shipment by boat are satisfactory. Cars of new-crop peanuts, improperly cured, which have been shelled and rushed to market too quickly, have been known to heat and mold badly on the way. Shipment of poorly-cured nuts should not be attempted.

No uniformity exists in the method of loading the cars of peanuts. Nearly every shipper seems to have a different way of arranging the sacks in the car. Sacks of shelled peanuts are usually loaded flat and crosswise of the car, 3 rows wide, but sometimes lengthwise of the

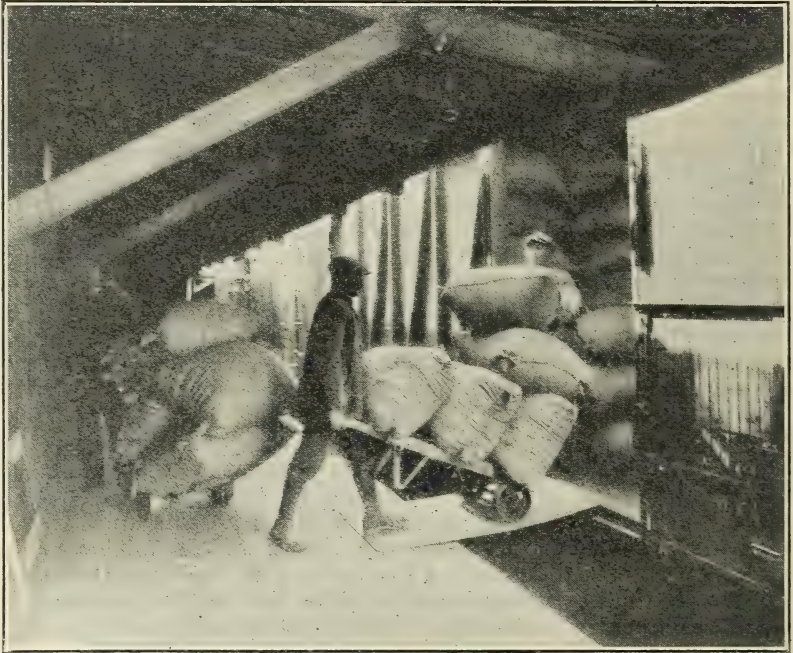


FIG. 18.—Loading car of cleaned Virginia peanuts. Most cleaners do not stack peanuts in the shell more than five layers high

car, 6 rows wide. Sometimes the sacks between the doors are only 2 rows wide, crosswise, with the ends of the car loaded 3 rows wide. The sacks may be loaded uniformly the entire length of the car, 2 to 3 layers high; may slope from 1 layer high at the door to 5 or 6 layers high in the ends of the car; or may be arranged in a dozen other ways. Occasionally the sacks are loaded on end, 6 or 7 rows wide, with sacks between the doors 2 layers high, 2 or 3 rows wide, crosswise. Some shippers prefer to leave the space between the doors empty, but boards are rarely used in this space as a bracing to keep the bags from falling down.

Cleaned peanuts are sometimes loaded 5 layers high, 3 sacks wide, running crosswise of the car. Other shippers load the sacks lengthwise, 5 sacks wide, 4 layers high, in the ends of the car, with 50 bags between the doors laid crosswise, 3 rows wide. The loading of a car of peanuts in the shell is seen in Figure 18. In pool cars containing both shelled and unshelled peanuts, the shelled peanuts are loaded in the ends of the car and the peanuts in the shell are placed toward the center of the car.

Peanuts are usually loaded in box cars. The doors are generally closed, but the doorways may be boarded up to the height of the load. When shipped in ventilated cars, the solid doors are closed, and often the vents as well.

In the southeastern section, practically all farmers' stock peanuts moving from country loading points are shipped in bulk, in much the same manner as grain. The peanuts are piled to a depth of 4 to 6 feet with door openings boarded on the inside.

Careful shippers take pains to remove protruding nails and cleats on the floor and sides of the car, which may remain from previous loadings, especially near the door. Sacks are often disarranged at and close to the doors, and protruding nails are likely to result in torn sacks, causing damage claims on the part of the receiver. When car bottoms are damp at the time of loading, peanut shells or burlap are sometimes placed in the bottom of the car to prevent the bottom tier of sacks from molding. Several years ago an effort was made on the part of the railroads to have car walls and floors lined with paper, but as the roads did not care to furnish the paper the idea was abandoned, and cars are now rarely paper-lined.

#### FREIGHT AND STEAMSHIP RATES

The freight rates on peanuts are the same for shelled and unshelled stock. According to tariffs on file with the Interstate Commerce Commission, the following rates between representative shipping points and consuming centers were in effect January 1, 1925 (Table 1). They are subject to change at any time. The carload minimum is 24,000 pounds in all cases except where otherwise specified. "A. R." means "all rail;" "R. & W." means "rail and water."



TABLE 1.—*Freight rates on peanuts, January 1, 1925*

From—	To—	Via	Rate per hundred pounds	
			Carloads	Less carloads
<b>Virginia:</b>				
Norfolk, Petersburg, Suffolk.....	New York, N. Y.....	A. R.....	Cents 40½	Cents 58½
Do.....	do.....	R. & W.....	38	55½
Franklin.....	do.....	A. R.....	43	61
Do.....	do.....	R. & W.....	40½	58
Norfolk, Petersburg, Suffolk.....	Chicago, Ill.....	A. R.....	63	91½
Franklin.....	do.....	A. R.....	65½	94
Norfolk, Petersburg, Suffolk.....	Denver, Colo.....	A. R.....	178	296½
Franklin.....	do.....	A. R.....	180½	299
Franklin, Norfolk, Petersburg, Suffolk.....	San Francisco, Calif.....	A. R.....	180	480
<b>Georgia:</b>				
Albany.....	Chicago, Ill.....	A. R.....	1 79½	165
Donalsonville, Valdosta.....	do.....	A. R.....	1 82	173½
Albany.....	New York, N. Y.....	A. R.....	2 78	117
Do.....	do.....	R. & W.....	2 74	111
Donalsonville.....	do.....	A. R.....	2 80½	161½
Do.....	do.....	R. & W.....	2 77	155½
Valdosta.....	do.....	A. R.....	2 80	126
Do.....	do.....	R. & W.....	2 77	120
Albany.....	Cleveland, Ohio.....	A. R.....	1 87½	163
Donalsonville, Valdosta.....	do.....	A. R.....	1 90	171½
Albany, Donalsonville, Valdosta.....	San Francisco, Calif.....	A. R.....	232½	465
<b>Texas:</b>				
Forth Worth, Denison, DeLeon.....	Chicago, Ill.....	A. R.....	79	176½
Do.....	Denver, Colo.....	A. R.....	69	213
Do.....	Wichita, Kans.....	A. R.....	69	146
Do.....	San Francisco, Calif.....	A. R.....	3 125	363
San Francisco, Calif., and other Pacific coast ports.....	New York, N. Y. (domestic).....	A. R.....	175	-----
Do.....	do.....	R. & W. (via Galveston).....	175	-----
Do.....	New York, N. Y. (im-ports).....	A. R.....	175	-----
Do.....	do.....	R. & W.....	4 100	-----
Do.....	Chicago, Ill. (domestic).....	A. R.....	175	-----
Do.....	Chicago, Ill. (imports).....	A. R.....	4 100	-----

<sup>1</sup> Carload minimum weight to Ohio River 30,000 pounds, beyond 24,000 pounds.

<sup>2</sup> Carload minimum weight 30,000 pounds.

<sup>3</sup> Rate \$1.25 with carload minimum 30,000 pounds; rate \$1.45 with carload minimum 24,000 pounds.

<sup>4</sup> Rate \$1 with carload minimum 50,000 pounds; rate \$1.25 with carload minimum 28,000 pounds.

Steamship rates are more flexible than railroad rates and change more frequently. Even between the same cities, two lines may have different rates prevailing. The following rates (Table 2) were in effect January 1, 1925, but are subject to changes at any time by the usual procedure. The carload minimum is 24,000 pounds in all cases except where otherwise specified.

TABLE 2.—Steamship rates on peanuts January 1, 1925, except where otherwise specified

From—	To—	Shelled or unshelled	Rate per hundred pounds	
			Car-loads	Less carloads
Norfolk, Va.....	New York, N. Y. <sup>1</sup> .....	(Shelled.....	<i>Cents</i> 33½	<i>Cents</i> 45
Do.....	Do.....	(Unshelled.....	38	48
Do.....	Boston, Mass. <sup>1</sup> .....	(Shelled.....	39	49
Do.....	Houston, Tex.....	(Unshelled.....	41½	51½
Do.....	Pacific coast ports.....	Shelled or unshelled.....	<sup>2</sup> 102½	124
Savannah, Ga.....	Boston, Mass.....	(Shelled.....	85	120
Do.....	New York, N. Y.....	(Unshelled.....	110	145
Do.....	Pacific coast ports.....	Shelled.....	30	30
Charleston, S. C.....	New York, N. Y.....	do.....	27	27
Do.....	Boston, Mass.....	do.....	80½	114
Do.....	Pacific coast ports.....	do.....	27	27
San Francisco and other Pacific coast ports.	New York, N. Y., and other Atlantic coast ports.	(Shelled.....	30	30
		(Unshelled.....	85	120
			<sup>2</sup> 60	60
			<sup>3</sup> 100	100

In addition to these rates, wharfage and handling charges of varying amounts are often charged at the port of shipment.

<sup>1</sup> Effective July 15, 1925.

<sup>2</sup> Carload minimum weight, 30,000 pounds

<sup>3</sup> No carload minimum weight specified.

#### LEADING CENTERS OF PRODUCTION AND SHIPMENT

Peanuts are grown throughout all the Southern States but commercial production is chiefly confined to rather limited areas. Cleaning and shelling plants and crushing mills have sprung up where production was heavy, but often farmers' stock peanuts are purchased at a considerable distance from the factory and shipped to it in carload lots. Sometimes these shipments travel several hundreds of miles. The leading shipping States for shelled peanuts do not coincide with the leading States of production, as will be seen by a comparison of Tables 3 and 4:

TABLE 3.—Leading producing States for peanuts—average of 1920–1923 crops<sup>1</sup>

State	Pounds	State	Pounds
North Carolina.....	138,691,000	Texas.....	105,266,000
Alabama.....	136,137,000	Florida.....	50,812,000
Georgia.....	117,074,000	South Carolina.....	29,227,000
Virginia.....	109,152,000	Tennessee.....	9,296,000

<sup>1</sup> Compiled from Weekly Report—Peanuts, No. 292, Jan. 28, 1925, issued by the Bureau of Agricultural Economics, U. S. Department of Agriculture. Mimeographed. Basis: Unshelled farmers' goods.

TABLE 4.—Leading shipping States for shelled and cleaned peanuts—average of 1920–21 to 1923–24 seasons<sup>2</sup>

State	Pounds	State	Pounds
Virginia.....	166,011,000	Texas.....	22,851,000
Georgia.....	84,264,000	South Carolina.....	8,424,000
Alabama.....	34,746,000	Florida.....	5,124,000
North Carolina.....	27,165,000	Tennessee.....	1,264,000

<sup>2</sup> Reduced to unshelled figures on arbitrary basis of 2 pounds shelled being equivalent to 3 pounds unshelled. Figures do not include shipments to points having shelling or crushing mills.



Figure 19 shows graphically the leading areas of production based on figures in the 1920 census. The sections of heaviest production centered around southeastern Virginia and northeastern North Carolina, and southwestern Georgia and southeastern Alabama.

These are also the States which ship cleaned and shelled peanuts most heavily, although not in the same proportions as they produce them. In addition, peanut plants are located in Texas, Florida, South Carolina, and Tennessee; but none are to be found at present in Louisiana, Mississippi, Arkansas, and Oklahoma, although all of these States produce peanuts. Tabulations of the movement of the 1920 to 1923 crops by States of shipment will be found in Table 11 on page 92.

An inexact picture of the relationship between production and shipments would be presented if no mention were made of the move-

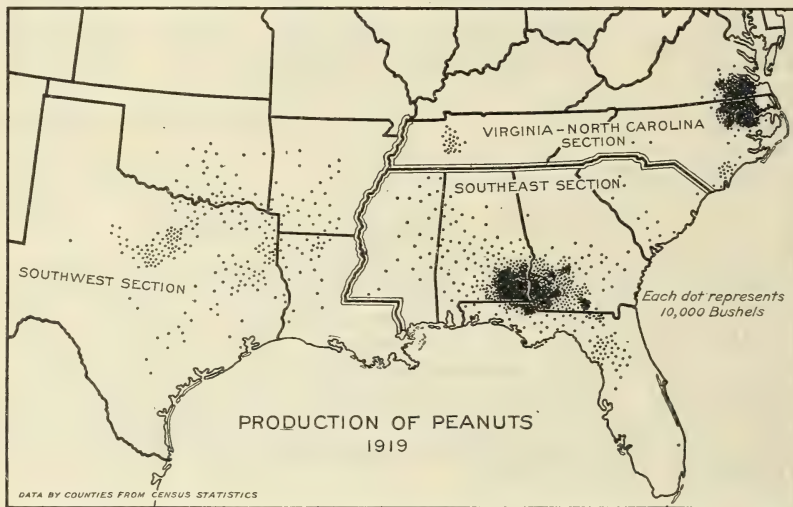


FIG. 19.—The production of peanuts centers largely in southeastern Virginia, northeastern North Carolina, southwestern Georgia, and southeastern Alabama

ment of peanut oil. For the year 1920-21, in addition to shipments of about 2,000,000 pounds from Texas and Virginia, a total of nearly 19,000,000 pounds of crude peanut oil was shipped from the Southeast alone. Even more peanut oil moved the following season. For the past two or three years, the high price of shelled peanuts has been effective in confining crushing very largely to factory screenings, No. 3 shelled peanuts, and farmers' stock too poor in quality and condition to warrant shelling, although in 1925 many cars of low-grade No. 2 peanuts were crushed.

Peanut shipments from the Southeast move chiefly from points in Georgia; southeastern peanut oil, on the contrary, is largely shipped from mills in Alabama towns. Tabulations of the shipments of domestic crude peanut oil from October 25, 1920, to October 26, 1924, by States of origin and destination, appear in Table 14 on page 97.

## HOW PEANUTS REACH THE CONSUMER

## PEANUTS IN THE SHELL

Not many years ago the only way the public came in contact with peanuts was in the shell, and the word "peanut" was associated almost exclusively in most minds with the street vender who had a small, whistling peanut stand, heated by gas or charcoal, where the raw peanuts were roasted slowly and irregularly. Now the small, whistling stand is becoming gradually less conspicuous, and is used more as a place to keep peanuts warm than for roasting. Street vendors (fig. 20) or retail grocers, who sell peanuts in 5 and 10 cent bags, now usually buy them of the jobbers or wholesale grocers already roasted. A more uniform degree of brownness and an improved flavor are assured by the use of large-scale roasters.

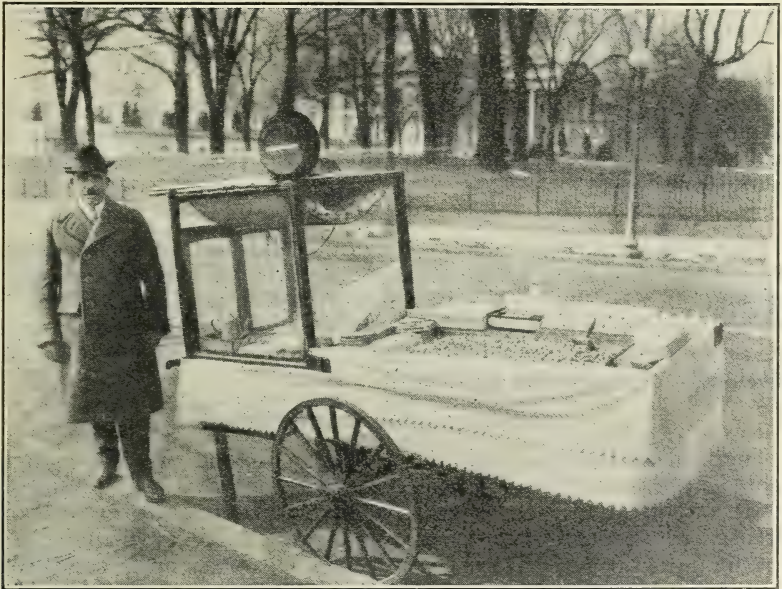


FIG. 20.—Street vender selling roasted peanuts. Often, as in this case, peanuts have to meet competition from pop corn, candy, and raisins

Vendors at circuses, fairs, ball games, and summer resorts, as well as street vendors and grocers still sell large quantities of roasted peanuts. Dealers look forward hopefully to the opening of the "summer season," which usually occurs in early spring, as an opportunity for increasing their sales. The litter caused by purchasers throwing around peanut shells, however, has been so undesirable that many cities, some parks, and other places of amusement, have prohibited the sale of peanuts in the shell, and for several years interest in cleaned peanuts among the trade grew constantly less. This tendency was encouraged by the high prices charged by vendors, many of whom have not appreciably increased the number of peanuts they sell for 5 cents since the war, although wholesale prices have fluctuated greatly since then and have at times fallen to one-third the war prices. During the past two or three years, sales of peanuts



in the shell have again increased, indicating that both shippers and receivers are actively endeavoring to push the sale of this type of goods.

#### SHELLED PEANUTS

Shelled peanuts reach the public through a wide variety of channels. The introduction of peanut butter and penny vending machines for salted peanuts some 20 years ago, provided new outlets for peanuts, which have steadily been expanded. Candy manufacturers have found that shelled peanuts can be combined with chocolate and sugar in a wide variety of forms, and new kinds of candy in which the peanut is a principal ingredient are constantly placed on the market. These important uses for peanuts are discussed in more detail later. In addition to salters, candy manufacturers and peanut butter concerns, wholesale grocers, large bakers, large retailers, and chain stores buy shelled peanuts heavily, through jobbers, brokers, or direct from the South.

#### PEANUT OIL

Indirectly, manufacturers of shortening, oleomargarine, nut margarine, salad oil, and soap, and other users of vegetable oils have during some years used large quantities of peanuts in the form of peanut oil.

#### PEANUT-FED HAMS

Even more indirectly, people consume thousands of tons of peanuts in the form of pork. Large areas of peanuts are raised especially for hogging-off, and during years of low prices or poor quality the hogs are fed very large quantities of peanuts which would otherwise have been shelled. "Peanut-fed hams" from several sections have obtained a considerable reputation.

#### SPECIAL METHODS OF DISTRIBUTION

There is perhaps no important article of food of such high food value as the peanut, of which so little is known by the general public. Little attempt has been made to advertise the peanut, or to bring it directly to the attention of the housewife. Many leaders in the peanut industry feel that if the industry is to expand, a campaign of education is essential, and that housewives must be told how easily raw peanuts can be prepared for use, and in how many foods and confections they can be employed.<sup>20</sup>

Marketing by parcel post has been tried out in a small way by shippers of Virginia-type peanuts. A circular giving various recipes was often inclosed with the individual lots of peanuts, which usually ranged from 1 to 5 pounds in weight. The success of parcel-post marketing lies in "repeat" orders, as advertising and other initial costs often more than absorb the profit on the first order.

For disposing of large quantities of raw peanuts other channels of distribution must be sought. At the present time it is difficult to obtain raw peanuts, and especially raw shelled peanuts, through ordinary retail channels. Yet recent experiments have shown that there is a definite demand for raw shelled peanuts on the part of the housekeeper if they are made available.

<sup>20</sup> Recipes for the use of peanuts in the home can be found in U. S. Department of Agriculture Yearbook Separate 746, *The Peanut, A Great American Food*, by H. S. Bailey and J. A. LeClerc; also in U. S. Department of Agriculture Yearbook, 1917, pp. 289-301.

During 1923 a cooperative association in Virginia experimented with putting up No. 1 shelled Virginia peanuts in lithographed cartons holding 1 pound and shipped in cases of 24 cartons. A booklet of recipes and instructions for roasting and salting at home was inclosed in each carton. They were advertised only slightly in a few cities, where they were sold to some extent through grocers and 5-and-10-cent stores. It was felt by close observers of the situation that with more extensive advertising and distribution, and a more reasonable price, the cartons might have moved readily.

In an experiment carried on in an important southern city a few years ago, shelled Spanish peanuts were placed in some 25 of the more important grocery stores. The sheller induced the grocers to take the peanuts on condition that if they did not sell in 30 days the goods would be taken off their hands. For the peanuts sold, the grocers agreed to pay a price one-third higher than prevailing carlot quotations. Each grocer was furnished with a white porcelain pan about 2 inches deep, in which the peanuts were displayed on a prominent counter in the store. In the pan was placed a white placard calling the attention of the customers to the fact that raw peanuts could now be purchased in small quantities, shelled and ready for use. Printed directions for preparing the nuts were given with each sale. As a result of this campaign every store placed repeat orders, and the store managers were optimistic over the future for the sale of raw Spanish peanuts in small lots.

It is important that the peanuts be on the shelves of the retailers before any large amount of advertising is undertaken, so that they will be available to the housekeeper when demand for them is created.

Two possible methods of packing raw peanuts for the retail trade have been mentioned more often than any others. The lithographed cartons, already tried out in a limited way for No. 1 Virginia peanuts, are also suitable, in 1 and 2-pound sizes for both jumbo and fancy peanuts in the shell and for extra large shelled Virginias, and for No. 1 shelled Spanish. The lithographed labels might bear the name of one shipper or a group of shippers. The cartons could be packed at the mills, and shipped in solid cars or in small quantities in cars of sacked peanuts. In the consuming markets they would be sold through wholesalers and chain stores by the grocery trade. It has been suggested that many people, accustomed to buying an occasional small bag of roasted peanuts from a street vender, would welcome the opportunity of buying a pound or two of jumbos in the shell and roasting the peanuts themselves.

Another plan that has been suggested is for the shipper to include 2-pound paper sacks with each order, 60 with 120-pound bags of shelled peanuts and 45 to 55 with bags of peanuts in the shell, depending on the weight of the nuts. These sacks should bear neat lithographed labels. They could be filled with peanuts either by the city jobber or wholesale grocer, or by the retailer. A circular giving brief descriptions of how to prepare raw peanuts could be given with each order or might be supplied free by the shipper upon receipt of a lithographed label taken from one of his cartons or bags.

At first, peanuts would need to be given special display in the retailer's store like any other new article, to bring them to the attention of the shopper. The old merchandizing axiom, "Goods



well displayed are half sold" should be heeded. The success of the 5 and 10 cent stores in selling large quantities of salted peanuts is due to two factors: (1) Low prices and (2) placing the nuts where the public can not help seeing them.

#### GEOGRAPHICAL DISTRIBUTION OF PEANUTS

Although peanuts are distributed widely over the country, a very large proportion of the domestic production is consumed east of the Mississippi and north of the Ohio Rivers. West of the Mississippi and especially west of the Rocky Mountains, oriental peanuts are a heavy competitor of the American product. Large shipments have gone to Canadian cities, and Cuba and other foreign countries have taken small quantities. Figures 21 to 24 show the distribution by States of shelled and cleaned peanuts, by sections and total, for the crop year 1923-24. The heaviest user of peanuts is Chicago,

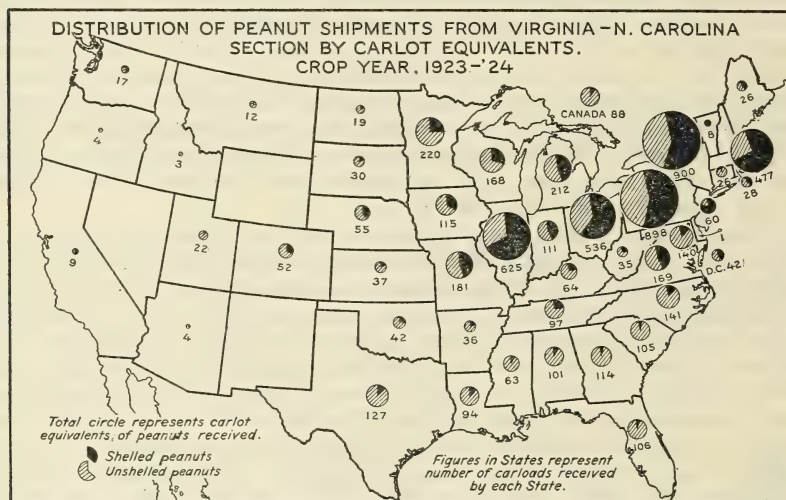


FIG. 21.—Southern and western purchasers usually buy Virginias in the shell; northeastern buyers take more shelled goods

the chief manufacturing center for both salted peanuts and peanut butter. New York, Boston, Philadelphia, and Cleveland follow in rank. Tabulations of the distribution of the 1920 to 1923 crops of peanuts by States of destination, are found on pages 94 and 95.

#### CHARACTER OF RECEIPTS IN PRINCIPAL MARKETS

A wide variation is found in the relative proportion of shelled and cleaned peanuts absorbed by different large cities. Inquiries of leading members of the trade in several large receiving centers a few years ago resulted in the following data, which have been revised in the light of recent tabulations and which can be considered as approximately accurate only over a series of years.

The proportion of goods in the shell to the total peanut receipts of a city varies from 10 per cent at Chicago to 65 per cent at Baltimore. About one-fifth of the peanuts coming into Boston are in the shell, and one-third of the receipts at New York are in that class. Peanuts in the shell predominate in the arrivals at Minneapolis and

St. Paul, which are heavy distributing points to towns in the Northwest. Shelled peanuts constitute four-fifths of the arrivals at Cincinnati and Kansas City and fully 85 per cent of the receipts at Cleveland.

The greater part of the heavy shelled receipts at Chicago are salted, although a large volume goes into the manufacture of peanut butter and peanut candy. At New York and Cincinnati, peanut-butter concerns take more shelled goods than any other class of trade. At Boston candy manufacturers are the chief receivers.

Receipts of southern Runners are probably heavier in Chicago and Cincinnati than in any other consuming center and are often substituted there for No. 1 and No. 2 shelled Virginias.

Most cities prefer jumbos or large-size peanuts in the shell to the fancy or second size but Cincinnati definitely demands the fancy size and Baltimore has a distinct preference for the extra grade.

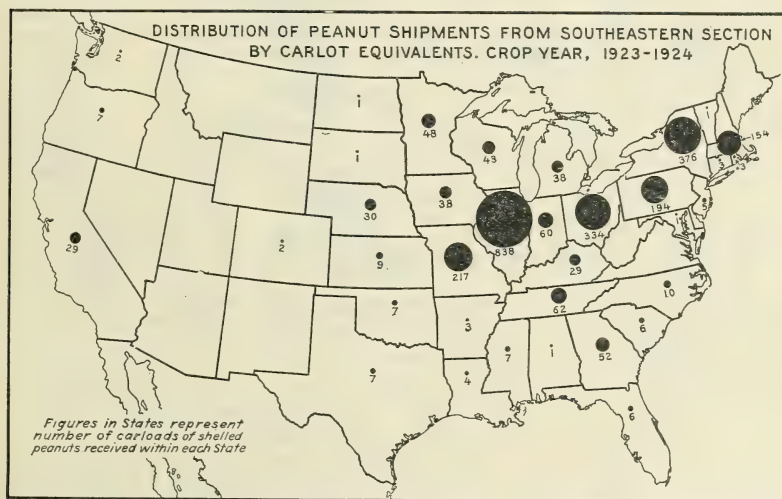


FIG. 22.—Southeastern shelled peanuts go principally to States in the North and East

Chicago is the heaviest receiver of oriental shelled peanuts. New York, St. Louis, Cleveland and other large cities also receive large quantities of oriental shelled, and west of the Plains area they can be found in all large markets.

### FEDERAL MARKET NEWS REPORTS

The market news reports on peanuts issued weekly by the Bureau of Agricultural Economics of the United States Department of Agriculture, are well known in all sections of the country where peanuts are grown in any quantity, and in many of the consuming markets. This service to peanut growers and shippers was established in the fall of 1919 at the earnest solicitation of prominent factors in the peanut industry in Virginia, and has since been expanded and improved. These reports contain news from both producing sections and the leading consuming centers.



## PRICE QUOTATIONS

The record of current prices and conditions prevailing in the peanut belt is based on telegrams received from leading cleaners, shellers, crushers, and brokers in the Virginia-North Carolina section, the Southeast, and the Southwest, giving the prices paid growers for farmers' grade peanuts, and quotations and selling prices f. o. b. shipping points for the shelled or cleaned product. City brokers in the North cooperate in the furnishing of southern quotations. F. o. b. prices of crude peanut oil, and of peanut meal and cake, are frequently obtained and published. In the larger city markets, salaried representatives of the Bureau of Agricultural Economics, without any financial interest in the goods involved, visit each week the leading brokers and handlers of peanuts and obtain a record of current prices and market conditions. Composite telegrams covering the situation in each market are forwarded promptly to Washington

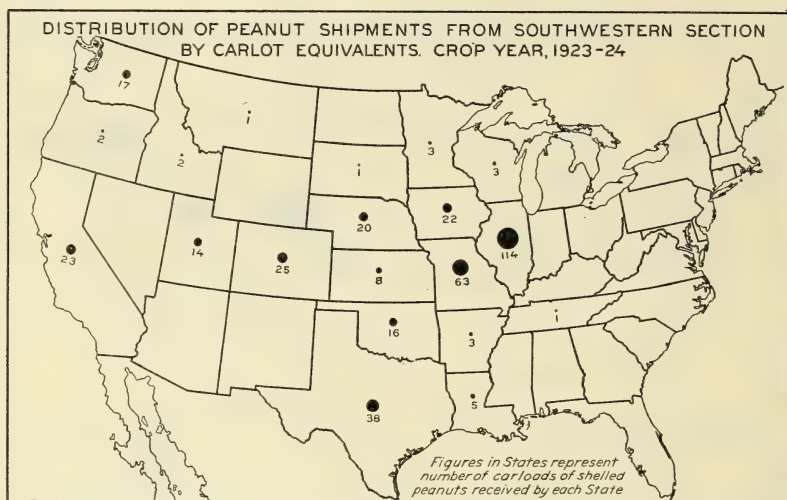


FIG. 23.—Illinois takes more southwestern peanuts than any other one State

to be edited and included in the news sheet. Prices of Chinese and other peanuts in British markets are taken from commercial sources and appear almost weekly in the report. Occasionally prices of peanuts and peanut oil f. o. b. Chinese ports are obtained and published.

## REPORTS OF MOVEMENT

Arrangements are in effect whereby the local agents of the different railroads and boat lines at points in the peanut belt at which cleaning, shelling, or crushing plants are located, report each week the number of pounds of shelled and unshelled peanuts and peanut oil moving out of their stations. These shipment statistics, which are tabulated and published each week, form the basis for the tabulated destinations by States beginning on page 94. A graphic summary of the average monthly movement of cleaned and shelled peanuts is seen in Figure 25.

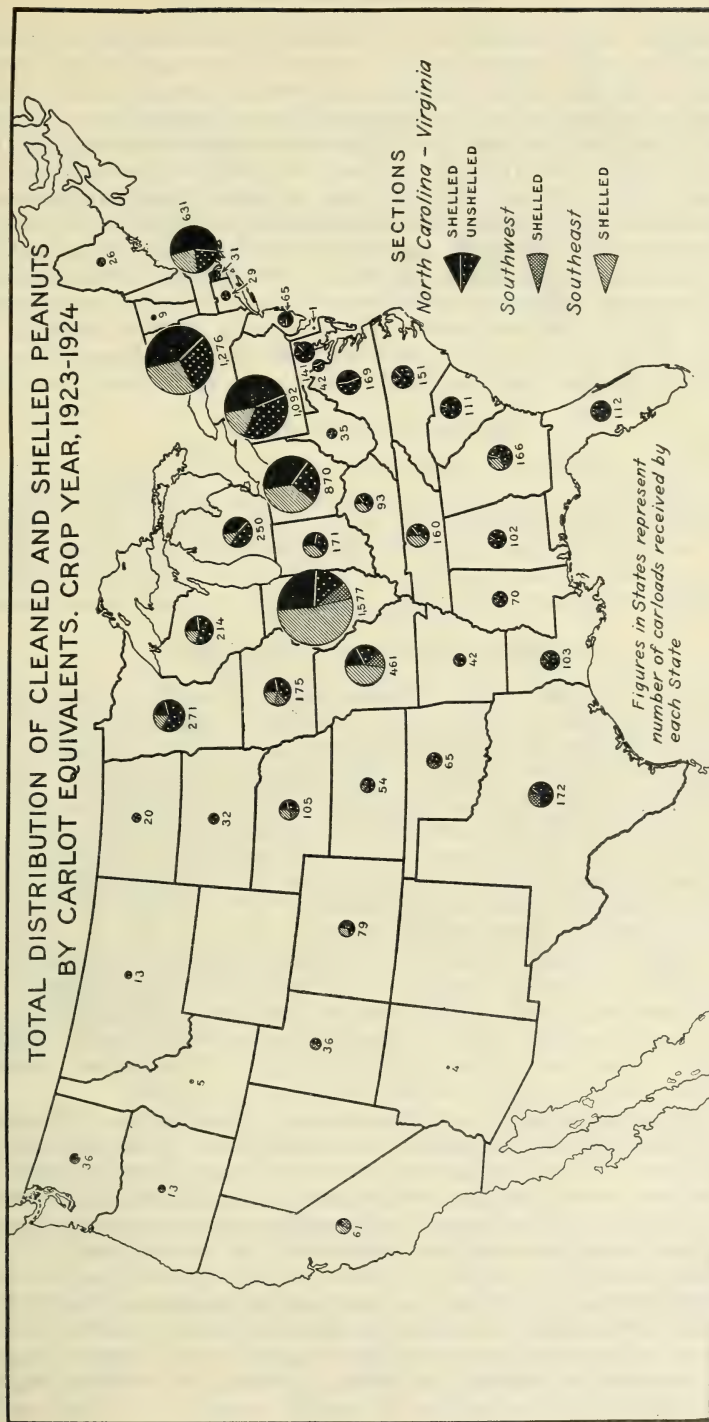


FIG. 24.—The scarcity of domestic shipments to the western part of the country is partly accounted for by the fact that in that area oriental peanuts are largely used



**IMPORTS AND EXPORTS**

Telegrams are received from bureau representatives in Seattle and San Francisco, recording market prices and conditions of Asiatic goods f. o. b. the Pacific coast; and the importations of oriental peanuts and peanut oil at those points when any take place. Imports at New York, Boston, and Norfolk are also obtained and published. Detailed import and export figures for peanuts, peanut oil, and cottonseed oil, covering all ports, are obtained from the Bureau of Foreign and Domestic Commerce and published each month. Complete summaries of import and export statistics are issued at the close of each calendar and fiscal year. Occasionally articles dealing with the peanut industry in other countries, as reported by American consular agents, are included. These weekly market reports are mailed without expense to anyone showing need for them, upon application to the Bureau of Agricultural Economics, Washington, D. C.

**CROP PRODUCTION STATISTICS**

Through a system of voluntary crop reporters, supervised by State or district statisticians, a record of the estimated production of peanuts is obtained from the entire peanut belt. These figures, revised monthly during the later growing and harvesting seasons, are of interest to everyone in the industry as the best available estimate of the quantity of peanuts produced in the United States.

**ROASTED PEANUTS IN THE SHELL**

Peanuts in the shell are sold to the public in roasted form. If the peanuts are to have a uniformly brown color they must be turned occasionally during the roasting process, and this is usually done in perforated revolving cylinders over heat of some kind. Gas is usually employed for the roasting, two or three lines of flame running the length of the cylinder underneath. Coal is sometimes used, and occasionally electricity is used with small roasters. The number of revolutions of the cylinder varies from 6 or 7 to the minute in a small cylinder holding 10 pounds of pods to 40 or 50 a minute in larger outfits holding from 60 to 200 pounds.

The length of time required for roasting peanuts varies with the degree of heat, moisture content of the pods, size of the cylinder and quantity roasted. With small roasters and only moderate heat, an hour is often necessary, but with large cylinders and a higher temperature the roasting may be accomplished in 15 to 20 minutes. Scorching is likely to result if the roasting is hurried too much.

In commercial practice a thermometer is never used. The exact time required for roasting is left to the judgment of the operator of the machine. When the kernels have reached a golden-brown color, the pods are poured out for cooling onto a truck with a perforated bottom, and then are rebagged. The shrinkage in weight of peanuts in the shell during roasting may run from 7 to 10 per cent.

The machinery for roasting peanuts on a large scale is similar to that used for roasting coffee. In fact, coffee roasters are using their equipment increasingly for roasting peanuts as a sideline. Some coffee roasters make a practice of keeping 1, 2, and 5 pound bags of roasted peanuts constantly on their counters, as well as smaller sacks, to attract the attention of people coming in to buy coffee.

Some coffee roasters get good results by having a special sale of roasted peanuts one day a week at reduced prices.

In some large cities commercial peanut roasting is concentrated in the hands of a very few firms. In others practically all of the large wholesalers do their own roasting. The charge for roasting varies tremendously, from 50 cents to \$1.25 per bag of about 100 pounds, and occasionally even higher. The usual charge in a large city may be expected to be between 75 cents and \$1.10 per bag. This includes calling for and delivering the peanuts, if desired.

There is a considerable demand on the part of street venders and small storekeepers for roasted peanuts in small bags. Paper bags holding 5 or 10 pounds of roasted peanuts have an especially large sale in some cities; other dealers put roasted stock out in bags containing 20 to 50 pounds.

A machine which has recently attained considerable popularity roasts the peanuts in a small cylinder operated by electricity and heated either by electricity or by gas, and often sold as an adjunct to a pop-corn stand. This small cylinder will roast the peanuts in about an hour, and the peanuts are kept hot in the compartment with the pop corn.

Several experiments with a view to preparing roasted salted peanuts in the shell have been made, and the finished products have been placed on the market in a limited way.

### PEANUT PRODUCTS

For many years peanuts reached the consuming public only in the form of roasted nuts in the shell. The introduction, over 20 years ago, of the penny vending machine for the sale of salted shelled Spanish peanuts, gave an impetus to the salting industry. Peanut candies of various kinds and peanut butter have also greatly increased in popularity, until shipments of shelled raw peanuts from the South during the past few seasons have been twice those of cleaned peanuts in the shell.

If to the raw shelled domestic peanuts used outside the peanut belt are added the shelled stocks used by peanut-products manufacturers in the South, and imported shelled peanuts, and if all are reduced to unshelled equivalents, it is probable that the total weight of the peanuts used in the shelled form in the country would be found to be between four and five times the weight of the peanuts, domestic and imported, consumed in the shell.

### SALTED PEANUTS

Perhaps more peanuts pass into consumption as salted peanuts than in any other way. Enormous quantities of domestic Spanish and Virginias are salted, and salting interests have been among the heaviest buyers of imported peanuts from China.

Spanish peanuts are customarily salted without removing the thin brown skins. First the nuts are gone over to remove foreign material. Usually they pass along an endless belt, enabling workers on either side to detect undesirable substances. In numerous factories, a stoner, employing suction, is also used to remove the stones or other heavy foreign matter from the peanuts. The nuts are then boiled in oil, in a vat or peanut cooker containing a woven

steel, colanderlike basket equipped with a bail and hoisting device, as shown in Figure 26. A vegetable oil of some kind, generally coconut oil, is customarily used.

Reports from prominent salters indicate that there is no uniformity in the temperature of the oil used in heating the kernels. As this temperature determines the length of time the nuts must stay in the oil, the cooking period necessarily varies considerably in different salting plants. One large salter brings the temperature of the oil up

### SHIPMENTS OF CLEANED AND SHELLED PEANUTS, BY SECTIONS MONTHLY AVERAGE, NOV., 1920-OCT., 1924

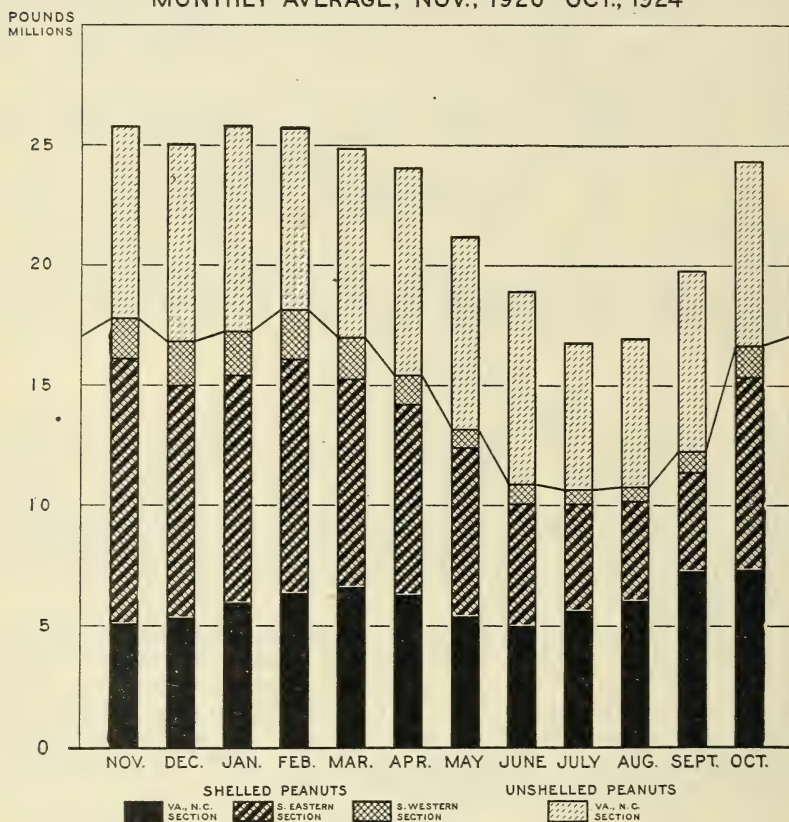


FIG. 25.—Unshelled peanuts and shelled Virginias move in fairly uniform volume throughout the year. Shipments of other shelled peanuts fall off heavily during the summer

to 350° F. before putting in the first batch of peanuts. Dropping 150 pounds of nuts into the oil so reduces its temperature that the thermometer usually reads from 275 to 288°. It is still hot enough, however, to start driving out the moisture from the peanuts. From this point the temperature gradually rises until it reaches about 325° F., by which time the peanuts have acquired a light-brown color. About 13 to 15 minutes are required to cook a batch of 150 pounds of peanuts at the temperature ranges just given. Other salters, using oil heated at lower temperatures, require up to 25 minutes or more to cook the kernels. In a few plants the peanuts



are delivered into the cooker in a small continuous stream which does not cool the oil appreciably, and the kernels are cooked in a very few minutes.

When the nuts reach the proper color they are promptly lifted out of the cooker, and the oil is drained off before salting. Usually the salt is shaken over the nuts with a sieve or is sprinkled on by hand, and then the peanuts are stirred or raked so that the salt is evenly distributed. Some manufacturers prefer to apply the salt before cooking the peanuts; others reverse the process. The proportion used by some salters is about 3 pounds of salt to 100 pounds of peanuts. Peanuts which are cooled immediately are often sprayed lightly with oil before salting, or occasionally with glucose or gum arabic and water, so the salt will stick better. Shriveled peanuts, if not too badly shriveled, are not considered unfit for salting as they tend to plump out after being subjected to the oil. Even if they do not completely fill out, a small percentage of shriveled kernels is not particularly objectionable.

In some large salting plants the cooked peanuts are emptied from the vats into large flat tanks or bins (fig. 27), where the oil is drained off by a suction pipe running under the tanks. These tanks are so large that after salt is scattered over the peanuts they are turned over with a shovel to mix in the salt thoroughly.

Salted Spanish peanuts are sold in various ways. Many reach the consumer in small envelope sacks retailing for 5 or 10 cents. Passenger trains, railroad stations, drug stores, and delicatessen stores furnish a considerable outlet for these goods. In some instances the firms putting out the envelope sacks are not large enough to do their own salting, and they purchase the finished product from salters, often in boxes having a paraffined-paper lining. Many large salters employ machinery for filling the sacks with peanuts; smaller firms fill the envelopes by hand, using a measuring cup to determine the quantity going into each sack.

Enormous quantities of bulk salted Spanish are shipped in barrels to 5 and 10 cent stores and others which use them as "leaders." A certain number of ounces may be sold for 10 cents, or the peanuts may be sold at so much per pound. In the Pacific coast group of one chain of 5 and 10 cent stores, it is said that 90 stores sold over 950,000 pounds of salted peanuts, both Spanish and Virginia types, in six months.

A few southern concerns are now putting out blanched salted Spanish (peanuts with the skins removed, salted) in 10-pound tins and smaller containers, prepared in much the same way as are salted Virginias, described on page 59 and 60. These blanched salted Spanish have met with favor.

#### VENDING MACHINES

In some cities enormous quantities of salted Spanish peanuts are disposed of through penny-in-the-slot vending machines. These machines are often loaned to merchants, drug stores, city transportation systems, etc., on a plan which allows the owner a certain percentage of the sales, usually 25 per cent, as a commission in lieu of rent. Vending machines are now widely distributed throughout the United States. They operate solely with Spanish peanuts, as

the Virginia type nut is too irregular in size and shape to fit the mechanism of the machine. A vending machine has recently been placed on the market which is heated by electricity. The peanuts are thus kept dry, crisp, and somewhat warm. An electric bulb on top of the glass bowl automatically flashes a light off and on, attracting the eye to the machine.

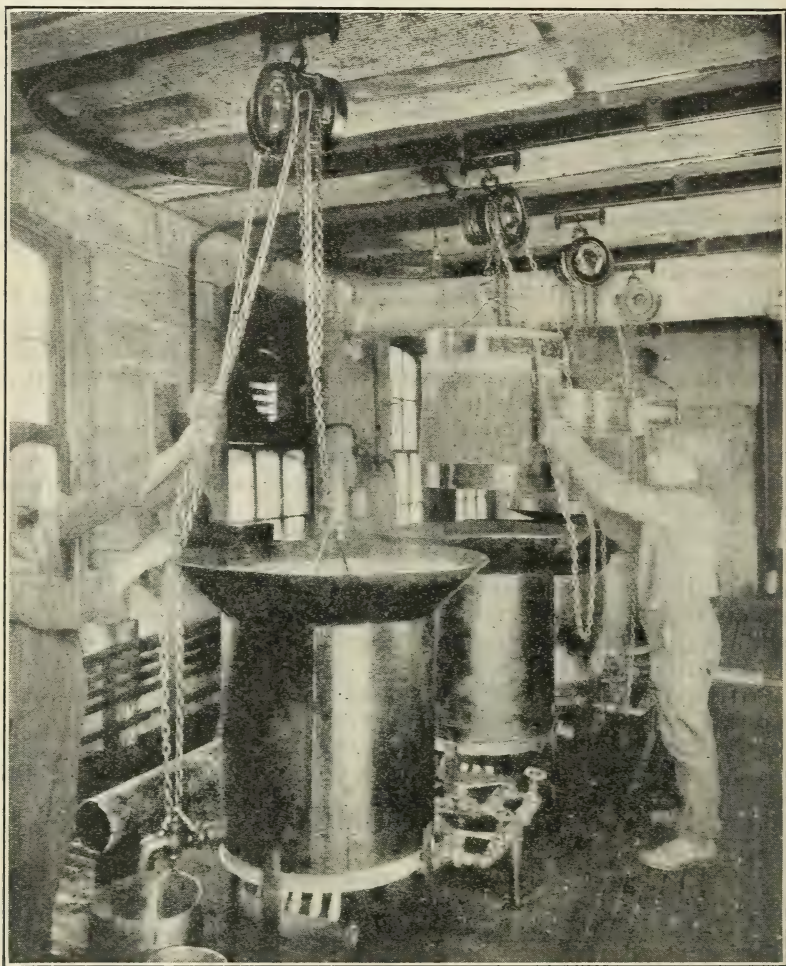


FIG. 26.—Cooking extra large shelled Virginia peanuts in vegetable oil preparatory to salting

#### SALTED VIRGINIAS

The Virginia extra large salted peanut industry is of comparatively recent introduction, but has now become firmly established. Many large factories have been erected, notably in cities in southeastern Virginia and in Chicago, especially equipped to handle the salting of large-size nuts, and aided by extensive advertising a lively demand has been developed for the product.



As a rule, only the large-size Virginia-type peanuts, both domestic and imported, running 28 to 34 to the ounce, are salted. After being cleaned, the kernels are roasted just enough (fig. 28) so that the thin red skins can be removed, either by hand or with blanching machinery. The whole-nut blancher consists essentially of a box containing two fine brushes revolving in opposite directions. The peanuts are poured into the top, the brushes remove the skins without

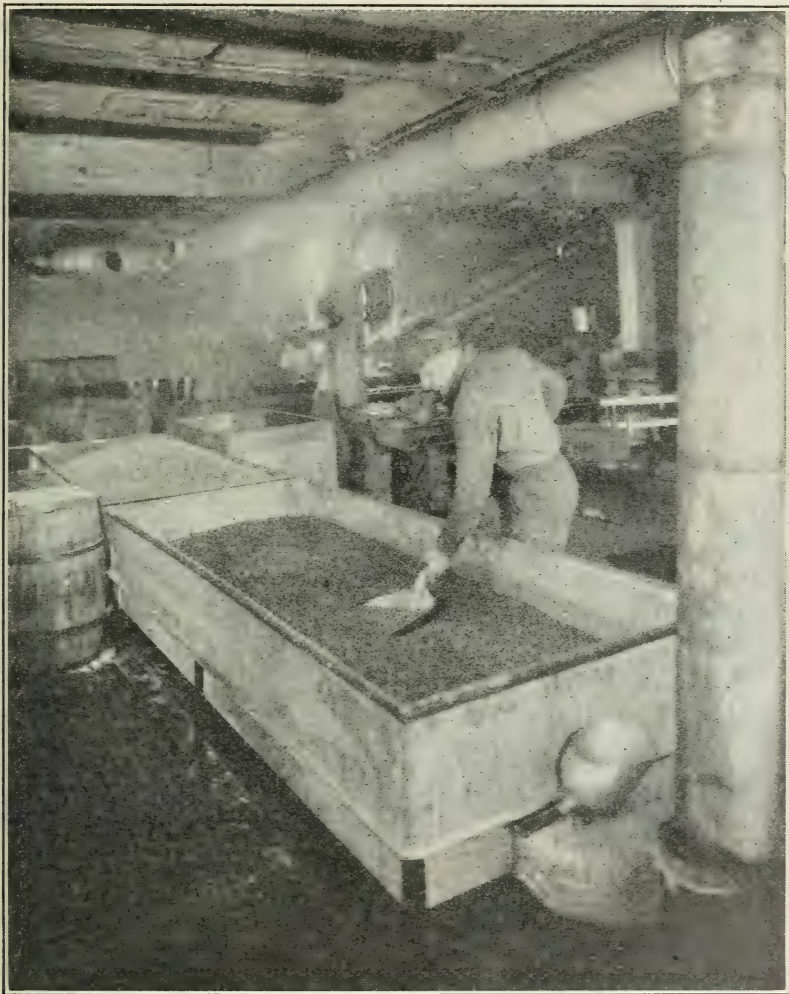


FIG. 27.—Salted peanuts. Mixing salt with the peanuts preparatory to packing. The vegetable oil in which the peanuts were cooked has been drained off by a suction pipe

splitting the kernel, and the nuts emerge onto a picking table, where foreign matter is removed by hand. Dust and skins not already blown away are drawn off by a suction pipe. They are then cooked in oil and salted in much the same way as are Spanish peanuts. Slightly less time is required, for during the cooking process in preparation for blanching some of the moisture is removed. The better grades are salted whole, but a large business is done in salted split kernels.



Salted Virginias are often packed in 10-pound tins, which are equipped with a friction top and contain, in addition, small glassine bags in which to retail the peanuts. The can is also accompanied by a little measuring cup, thus enabling the grocer, druggist, or other retailer to measure out the contents of the can accurately into the glassine bags, which are then displayed on the counter. Many salted Virginias are shipped in glassine bags packed in cardboard boxes lined with paraffined paper. A 5-cent sack may contain from  $1\frac{1}{4}$  to 2 ounces, depending on the market and the profit expected and on whether the kernels are whole or split. Considerable quantities are packed in friction-top glass jars of 3, 6, and 12 ounce capacity. Peanuts in air-tight glass containers have been opened six years

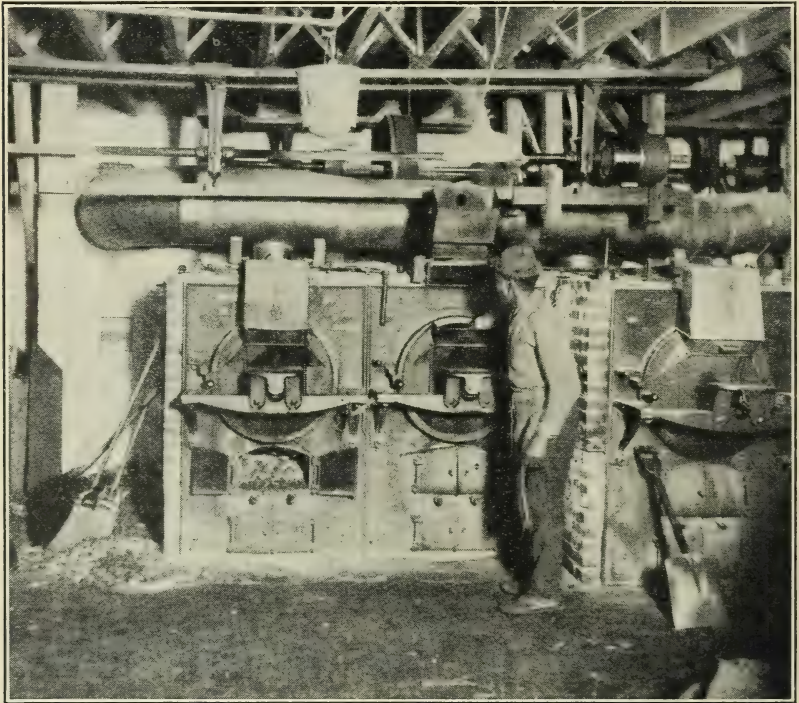


FIG. 28.—Roasting shelled Virginia-type peanuts in a Virginia factory. The revolving cylinders are heated in this instance by coal fires, but usually gas is employed. The operator is testing the peanuts to see if the roasting has been completed

after they were packed and found to be as fresh and with as good flavor as newly-packed stock.

A number of concerns furnish salted peanuts in glassine bags which are already attached to large cardboards, making an attractive display. This method of distribution is popular with dealers as it requires little labor on their part.

Chicago is easily the outstanding market for salted peanuts, and especially for salted Spanish. The vast vending-machine system on the streets, on elevated station platforms, in stores, and various public places is the strongest factor in producing this situation. Theaters are also responsible for the sale of many peanuts, and the majority of the candy stores in Chicago and many other cities carry salted peanuts.

## PEANUT BUTTER

Peanut butter first came into use a little over 20 years ago as a food for invalids. Now it is recognized as a staple article of food, and an increasingly large number of factories are necessary to supply the demand. The food value of peanut butter is very high.<sup>21</sup>

Peanut butter contains only the ground kernels of roasted, blanched peanuts, with the addition of 1 to 4 per cent of salt. High-grade peanut butter retains its sweetness and flavor many months in an air-tight package. Large quantities are used in the manufacture of sandwiches, candy, and bakery products, but its chief use is probably in the home.<sup>22</sup>

To obtain a smooth, fine-flavored peanut butter, a blend of the Spanish and Virginia types is employed. Spanish peanuts contain an average of 50 per cent oil; the Virginia type peanuts possess only 42 per cent of oil.<sup>23</sup> Virginia peanuts alone make a butter that is too dry, and a butter made from Spanish alone is too oily. Used in combination, the drier Virginias absorb the excess oil of the Spanish. There is no uniformity in the proportions used of the two varieties. Some manufacturers employ a 50-50 combination, others prefer one-third Spanish to two-thirds Virginias, or vice versa, depending upon whether they want a dry or oily product. Some manufacturers substitute shelled Runners for shelled Virginias in their peanut-butter formulas.

The peanut-butter factories buy shelled goods only, usually raw, of the grades necessary to produce the quality of peanut butter that they manufacture. Some peanut-butter manufacturers purchase shelled peanuts which have already been roasted and blanched. The same thing is true of some salters and candy manufacturers, except that the latter firms buy "white roast" peanuts, whereas concerns wanting them for butter usually get "brown roast" goods.

When bought in the raw state, efforts are made in the better class of factories to remove all foreign material from the peanuts by means of an automatic cleaner or stoner, after which they are roasted in cylindrical roasters and cooled. When used exclusively for shelled peanuts, manufacturers prefer an unperforated cylinder, with a very smooth interior surface. The peanuts are then ready for blanching in split-nut blanchers, in which the revolving brushes are placed against corrugated plates, thus splitting the peanuts in half and removing the seed-germs or hearts, as well as the thin skins. The presence of any considerable quantity of hearts in peanut butter is believed to promote premature rancidity. A specky appearance results if the skins are ground with the meats, and they give a slightly bitter taste to the butter. Badly shriveled peanuts will not blanch properly; consequently a butter containing many bad shrivels will be both bitter and spotted in color. The skins, which contain from 20 to 30 per cent of oil,<sup>24</sup> and the germs may be sold for stock food, for oil, or for soap stock. In the better class of factories, before being ground, the peanuts pass over an endless-belt picking table

<sup>21</sup> For calorie value of peanuts and other foods, see U. S. Office of Experiment Stations Bulletin 28, revised, *The Chemical Composition of American Food Materials*, by W. O. Atwater and A. P. Bryant.

<sup>22</sup> Recipes for the use of peanut butter in the home can be found in U. S. Department of Agriculture Circular 128, *The Manufacture and Use of Peanut Butter*, by H. C. Thompson, pp. 14-16.

<sup>23</sup> Thompson, H. C., and H. S. Bailey. Peanut oil. *In* U. S. Dept. Agr. Farmers' Bul. 751, p. 10. 1920. (Revised.)

<sup>24</sup> Reed, J. B. By-products from crushing peanuts. U. S. Dept. Agr. Bul. 1096, p. 4. 1922.



(fig. 29) and workers on either side remove the stones and other remaining foreign material, moldy, burnt and off-color kernels, and imperfectly-blanched nuts to which bits of skin still adhere, while the loose, light material or chaff is drawn off by a suction pipe.

The two varieties of peanuts are mixed in the desired proportion before being fed into the hopper of the mill for grinding or crushing into butter. In large plants the two varieties are often fed into the hopper in a steady stream, in the desired proportion, through chutes from the floor above. An automatic salt feeder allows a definite proportion of salt to be fed into the mill along with the peanut kernels. The crushing is done by a revolving screw, which forces along the peanut mass through a pair of ribbed, grinding disks into

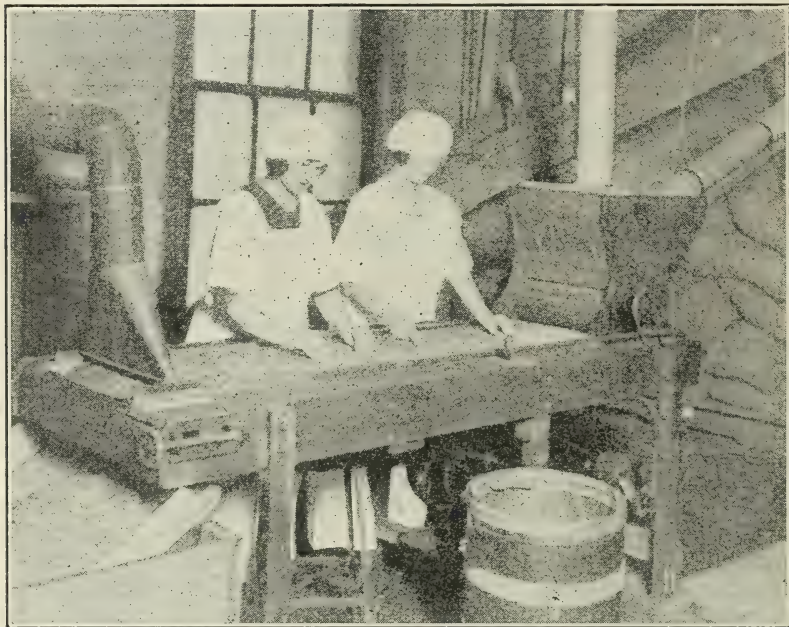


FIG. 29.—Picking table in a peanut-butter plant. Burnt peanuts and foreign matter are removed by hand, and light material by suction, before the peanuts pass to the peanut-butter mill

a discharge spout. The container for the butter is usually filled directly from this spout, although a few plants have separate filling machines. The whole operation is illustrated in figure 30.

The better grades of peanut butter, made from No. 1 Spanish and No. 1 Virginias, are usually packed in glass jars holding from  $3\frac{1}{2}$  to 16 ounces. Occasionally glass jars of as large as 29-ounce capacity are used. When the jars are filled, covers are added by a capping-machine, under a heavy vacuum pressure, and the glasses are labeled (fig. 31).

Peanut butter is used as a filler in several kinds of candy. One popular style has a jacket of molasses or sirup over the butter, surrounded by a thin coating of chocolate or with a so-called satin finish. Long, straw-shaped candies with peanut butter centers are featured, especially for children. Sandwiches made of crackers with a peanut-butter filling are put up in parchment-paper cartons and have a ready sale at delicatessen and other shops:



## PEANUT BUTTER IN BULK

Bulk peanut butter, often prepared from inferior grades of peanuts, is sold in enormous quantities in tins of 8 ounces to 50 pounds capacity. Considerable demand has also developed for tubs, barrels, and tierces of bulk peanut butter.

The sale of bulk peanut butter, as conducted at present, is open to several serious objections. Retailers frequently do not take

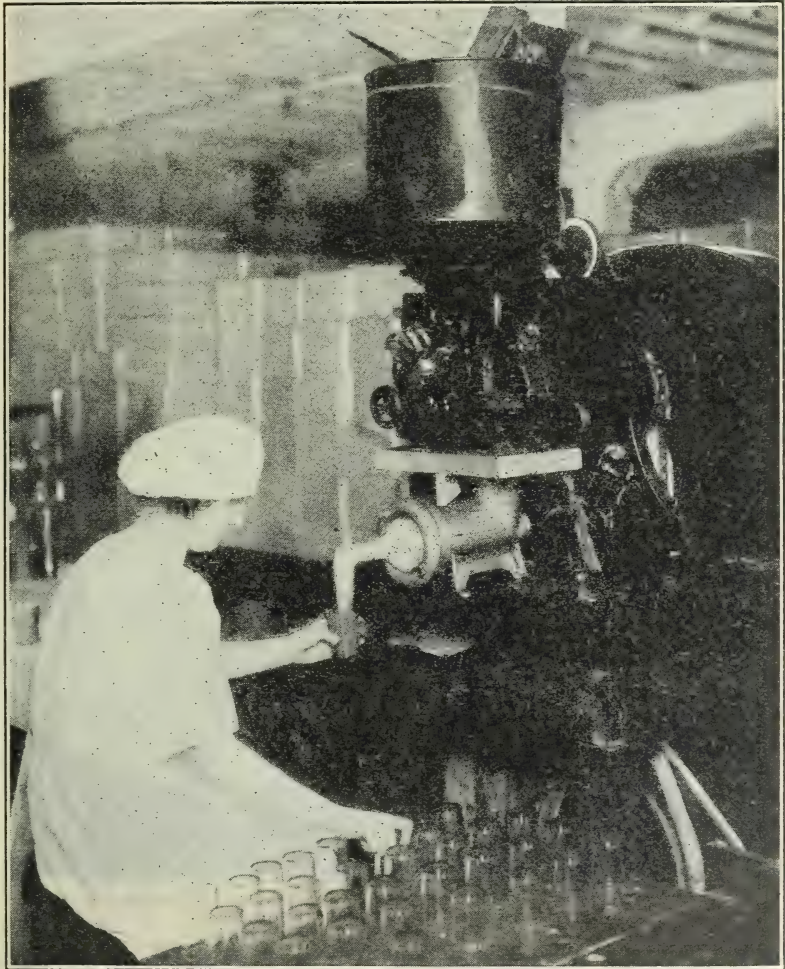


FIG. 30.—Filling glass jars with peanut butter. The peanuts drop into the hopper at the top of the mill, are ground up, nothing but salt is added, and the completed product, peanut butter, comes from the spout

proper care in dispensing the product, and the tin or tub is often uninviting in appearance. Further, as bulk butter is often made from No. 2 peanuts, it necessarily contains more or less dirt, grit, and hearts and skins of shriveled peanuts.

A few factories even use No. 3 peanuts in making butter, sometimes called "confectioners' peanut butter." As they come from the clean-

ing plant the sacks contain hulls and other refuse, in addition to peanuts, and sometimes factory sweepings. The contents are dumped into casks of water; sticks and other light matter rise to the top and are scooped off; stones and some of the dirt sink to the bottom; and the peanuts in between are slightly picked over before grinding.

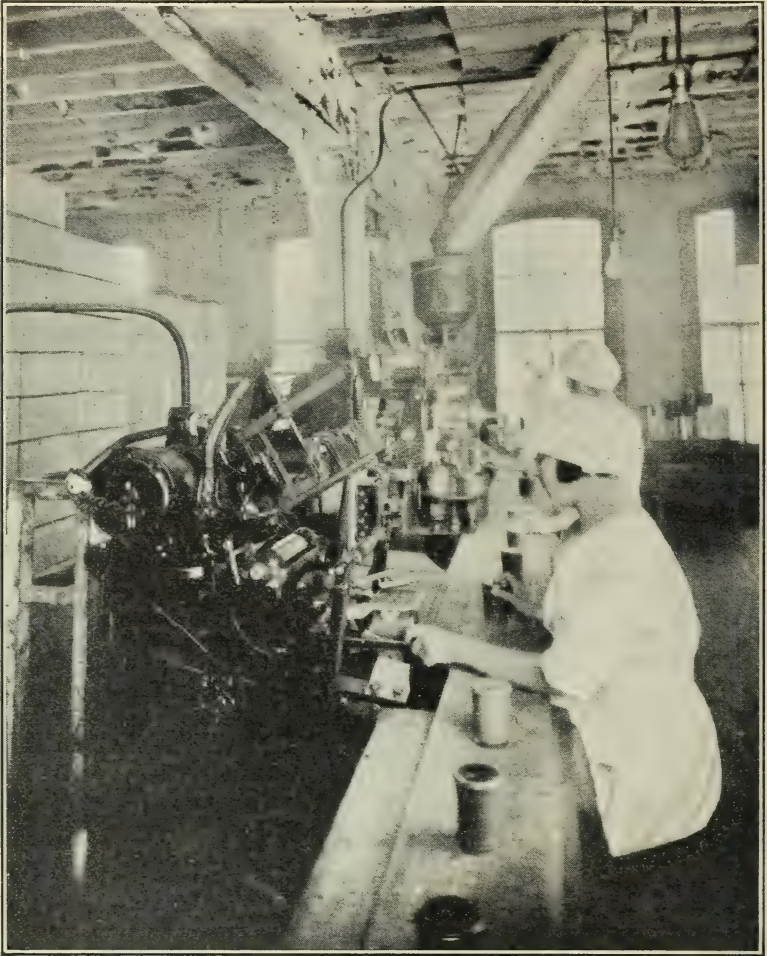


FIG. 31.—Filling, capping, and labeling glass jars of peanut butter. An endless belt carries the jars from one machine to another

It is impossible for a factory to turn out a high grade of peanut butter from cheap, low-grade peanuts, improperly cleaned. Some of the best manufacturers feel that if all No. 2 and No. 3 grade peanuts were kept in the South and crushed for oil or used for stock food, the demand for bulk peanut butter would be stimulated, and repeat orders would be more general and more frequent. Retail sales of bulk peanut butter of good quality, handled with due regard for cleanliness and sanitation, can be made a profitable part of the grocer's business.



The National Peanut Butter Manufacturers' Association, formed in 1922, is the trade association of the industry. Its chief objects are to increase the consumption of peanut butter and to standardize its quality. The association has adopted the following standards:

Fancy peanut butter is made from none other than clean, sweet No. 1 peanuts, properly picked, with hearts and all foreign matter removed. Standard peanut butter is made from nothing less than clean, sweet No. 2 peanuts, properly picked, with hearts and foreign matter removed.

#### PEANUT CANDY

Peanut candies of various kinds furnish an outlet for shelled peanuts that is hardly less important than that supplied by salters and peanut-butter manufacturers. Both Spanish and Virginia type peanuts are used for candies. No. 2 grades are in heavy demand for the



FIG. 32.—Rolling out peanut candy, preparatory to cutting it up into 5-cent bars. The iron "rails" at the sides of the table keep the candy to a uniform thickness

cheaper types of candy, such as peanut squares and peanut bars retailing for a cent, and for some of the 5-cent bars. No. 1 grade nuts are used for the 5 and 10 cent bars, as well as for peanut brittle and other candies. Virginia type peanuts of No. 1 or extra large grade are used as a substitute for almonds in chocolate bars. They are in considerable demand for making sugar-coated peanuts. Shelled Runners are sometimes substituted for shelled Virginias in the cheaper grades of candy.

#### PEANUT BARS

The following formula is sometimes used commercially in making candy for peanut bars: Five pounds glucose, 6 pounds sugar, 25 pounds blanched Virginia-type peanuts, and enough water to dissolve the sugar. When the sirup of sugar and water comes to a boil, 10

pounds of peanuts are added to the pan and the mixture cooked to 265° F. or until it breaks crisply, which will take about 15 minutes. The pan is then removed from the fire and the remainder of the peanuts stirred in. When thoroughly mixed the candy is poured onto the "cooler"—a metal slab which has had a coating of sugar to keep the candy from sticking—and rolled out. Steel bars of the thickness desired—about 1½ inches high for 5-cent bars—at either side of the table keep the sticky mass from running over and provide a base along which a heavy roller is run (fig. 32) to give the candy a uniform thickness, much as the housewife rolls out dough. As peanut bars are sold by count rather than by weight it is important that they be cut to a definite size. The cutter (fig. 33) consists of a hand roller with sharp metal disks strung along it at definite intervals. A



FIG. 33.—Cutting peanut candy into 5-cent bars. As the candy hardens quickly, the cutting must immediately follow the rolling to a uniform thickness seen in Figure 32

typical 5-cent bar will measure 3¾ by 2¾ inches. Some manufacturers pack 30 bars in a paraffine-lined cardboard box, weighing about 4 pounds; others pack 24 bars together. The smaller, penny bars are packed 100 or 120 in a box. Figure 34 shows peanut bars being packed in 4-pound boxes.

#### PEANUT BRITTLE

Proportionately more sirup is needed when peanut brittle is prepared. One manufacturer uses the following formula: Twelve pounds glucose, 18 pounds white sugar, 2 pounds brown sugar, 16 pounds No. 1 raw Spanish peanuts, 2 ounces salt, 3 ounces bicarbonate of soda. The glucose and sugar are placed in a pan with enough water to dissolve the sugar. When the sirup boils, the peanuts are added and the mixture cooked to 290° F. A longer time is required in cooking brittle, as the peanuts have had no previous



heating. All peanut candy must be stirred continually when on the fire to prevent sticking. The exact time to stop the cooking is determined by dipping a spoonful of the mixture into cold water. If the brittle is done, it will harden at once. After it is removed from the fire, the salt is added and stirred in well. The soda is then added and the mixture stirred thoroughly. When the batch has risen, it is poured onto a marble slab. Brittle is not rolled out, but is spread with a spatula to a rather uniform thickness, and cut while still warm. The exact thickness is not important, as peanut brittle is sold by weight, in cartons lined with paraffined paper and holding one-half pound, 5 pounds, 10 pounds, or sometimes 25 pounds of the candy.

#### SUGAR-COATED PEANUTS

The preparation of "sugar-coated peanuts" is an industry of increasing importance in some cities. These are often made in small

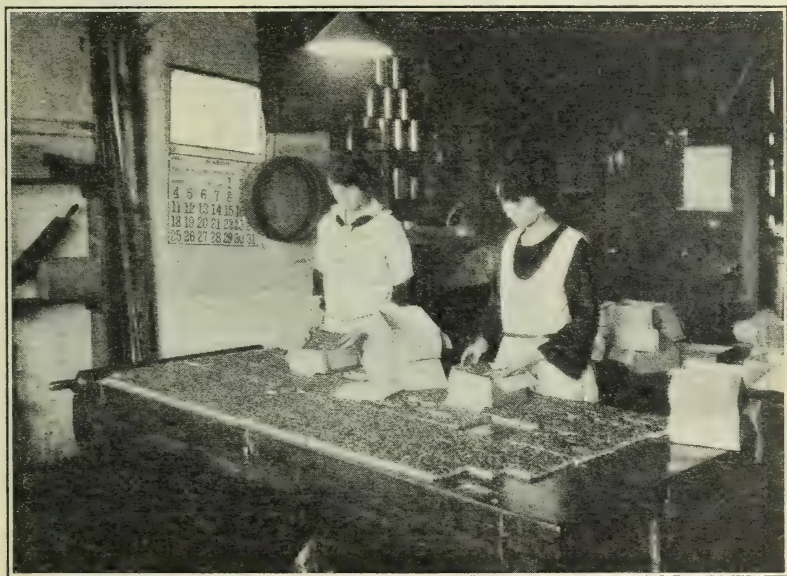


FIG. 34.—Packing peanut candy in cardboard boxes lined with paraffined paper. These are the bars that were rolled and cut in Figures 32 and 33

"candy kitchens" with inadequate equipment, but when prepared commercially large revolving pans, with steam coils on the outside (fig. 35), are employed. Extra large shelled Virginia-type peanuts, fully roasted and blanched, are turned for three hours in the pan, while small quantities of a sirup made half of glucose and half of sugar are poured in at intervals. The sirup is taken on by the peanuts, and the rubbing of the kernels against each other as they revolve gives them the desired roughened appearance. A little coloring matter is often included in the last sirup mixture. They are then slightly gummed with gum arabic and allowed to stand over night, when they are returned to the pan and a thin coating of lac is applied. When dry they are packed in small cardboard packages, retailing for 5 cents, or they may be sold in bulk. Sugar-coated peanuts are called "burnt peanuts" by the trade.

Candy manufacturers are constantly finding new uses for peanuts, and new kinds of peanut candy are frequently offered for sale. One of the more recent developments in the candy industry is a peanut bar, in which the center, consisting of either nougat or a heavy cream dipped in caramel, is covered with roasted shelled Virginia peanuts and then dipped in rich chocolate. Each bar is then wrapped in glassine paper, and 24 bars are packed in a carton.

#### BAKERY PRODUCTS

In a few cities a considerable and increasing volume of shelled Virginia and Spanish-type peanuts is absorbed by large bakeries and makers of confections. Peanut cookies and peanut jumbles, packed



FIG. 35.—Making "sugar-coated peanuts," known as "burnt peanuts" by the trade. Note the steam coils around the outside of the revolving pans

in parchment paper and tightly sealed in small cardboard boxes or cartons, are sold in all parts of the country, at groceries and general stores. Confections of the pop corn and peanut type, in small cardboard cartons, are widely popular, and are to be seen on fruit stands and grocers' shelves generally. Finally, granulated Virginia-type peanuts are sprinkled on the top of German coffee cake and other bakery products.

#### PEANUT OIL

Before the World War comparatively little American peanut oil was produced, but during the war, the tremendous demand for vegetable oils to supply glycerin for munitions purposes and to meet the growing call for margarines and lard substitutes, served as a powerful stimulus to increased crushing. By 1918 a production of 95,934,000 pounds of peanut oil was reached <sup>25</sup> and imports were heavy.

<sup>25</sup> Bailey, H. S. and B. E. Reuter. The production and conservation of fats and oils in the United States. U. S. Dept. Agr. Bul. 769 (sup.), p. 1. 1919.



The year following, production had fallen slightly to 87,606,844 pounds<sup>26</sup> but net imports for the fiscal year 1919-20 had increased to 165,390,713 pounds. This was the peak of the movement. During the 1921-22 season, shipment reports from freight agents at crushing points indicate that only 25,500,000 pounds of domestic crude peanut oil were shipped, and the total for the two following seasons was less than 5,000,000 pounds. In the fiscal year 1922-23, net imports of peanut oil had jumped to 7,500,000 pounds from 2,650,000 the year before; and net imports for the fiscal year 1923-24 totaled over 10,000,000 pounds, adding materially to the domestic supply.

#### OIL MILLS

Many peanut mills in the Southeastern and Southwestern States are equipped with both shelling and crushing machinery, and handle their purchases of farmers' goods in accordance with the variety and grade of the nuts and the trend of the market. During the fall of 1921, for example, the relationship between the prices of farmers' goods, shelled peanuts, and peanut oil, was such that the bulk of the Runner crop and a large amount of Spanish peanuts were crushed for oil. The two years following, however, both farmers' goods and shelled stock were selling higher in proportion to the price of oil, and it was profitable to crush, in addition to table pickings and screenings, only such farmers' goods as were not suitable for shelling. As little additional machinery is needed to enable a cotton-oil mill to operate on peanuts, many mills in the Cotton Belt crush peanuts when they are not busy with cottonseed and peanuts are available.

Plants which do not sell shelled goods, but crush exclusively, have no need for elaborate cleaning machinery. Running the peanuts through a sand reel, shaker, and stoner before they pass into the huller, is considered enough. But often the peanuts pass over a magnet just before going into the machine that crushes them to draw out pieces of iron.

#### PRESSES

Both hydraulic (fig. 36) and expeller types of presses are employed in crushing peanuts. For details of the processes of operation of these presses see United States Department of Agriculture Bulletin 1096.<sup>27</sup>

Few mills in the South now crush unshelled peanuts. Not only is the oil produced of a lower grade than when shelled peanuts are used, but the shells absorb oil, which adds nothing to the fertilizing value of the meal. The cost of cleaning and shelling is more than taken care of by the increased value of the oil obtained from the shelled peanuts.

#### HANDLING CRUDE PEANUT OIL

As it comes from the press, the dark yellow crude peanut oil contains some fine meal, which is either filtered out or allowed to settle out before the oil can be called prime crude. Crushing mills are usually located beside railroad tracks, so that the oil can be pumped directly into tank cars. Large buyers usually furnish tank cars for transporting the oil they purchase. Eight thousand

<sup>26</sup> United States Department of Commerce. Bureau of the Census. Animal and vegetable fats and oils. Production, consumption, imports, exports and stocks . . . 1919 to 1923. p. 4. 1924.

<sup>27</sup> Reed, J. B. By-products from crushing peanuts. U. S. Dept. Agr. Bul. 1096, 12 pp., illus. 1922.

gallons, or 60,000 pounds, is considered a carload unless otherwise specified. For all practical purposes, a gallon of peanut oil can be considered as weighing  $7\frac{1}{2}$  pounds. Occasionally small lots of crude peanut oil are shipped in iron-bound barrels or drums holding about 400 pounds net.

#### YIELDS OF PEANUT OIL

The quantity of peanut oil obtained from a ton of crushing stock depends upon the variety, the quantity of trash in the lot, the moisture content, and, primarily, upon whether it is straight farmers' goods or so-called "mill stock" or "oil stock." In 1922 and 1923 the bulk of the peanut crushing in the Southeast, which turns out

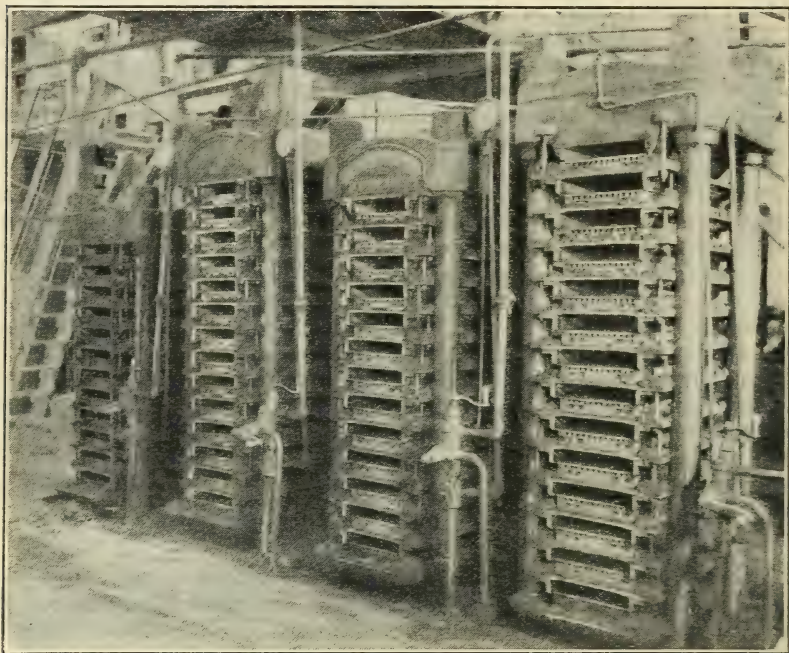


FIG. 36.—Hydraulic presses used for crushing oil from peanuts

most of the crude peanut oil made in the United States, was from mill stock, or No. 3 peanuts. This includes shelled peanuts picked out by the operators at the belts in the shelling plants as being below grade, broken pieces of nuts, and undersized kernels which passed through the screens during the shelling operations. Crushers figure that No. 3 Spanish peanuts should turn out about 700 pounds of prime crude peanut oil and 1,200 pounds of peanut cake or meal, allowing 100 pounds of manufacturing loss per ton of mill stock, chiefly in the form of moisture. In commercial practice, Spanish and Runner mill stock are usually not kept separate, but are crushed together.

According to southern crushers, a ton of farmers' stock Spanish peanuts yields, if shelled before crushing, about 575–600 pounds of prime crude oil and about 770 to 800 pounds of cake of about 46 per cent protein content. If crushed straight, with shells, a ton of



farmers' stock Spanish will crush out about 560 pounds of prime crude oil and 1,300 pounds of cake of about 30 per cent protein content. About 525 to 560 pounds of crude oil and about 1,300 pounds of cake of 28 per cent protein content can be obtained from a ton of Georgia or Alabama Runners. No. 3 Virginias will yield about 560 pounds of oil and 1,340 pounds of peanut cake to the ton, allowing 100 pounds of manufacturing loss.

"Oil stock," when composed chiefly of peanut stems and shriveled shelled Virginia peanuts, may yield only 50 pounds of oil to the ton. On the other hand, when consisting of slightly damaged shelled Spanish, it has yielded as high as 860 pounds of crude oil to the ton.

The refining loss of crude peanut oil will range from 4 to 9 per cent, depending upon the quality of the peanuts crushed. Prime crude oil is usually sold on the basis of 5 per cent refining loss, and for each 1 per cent of loss above 5, 1 per cent of the contract price is customarily deducted.

#### VIRGIN OIL

The crushing of oil from peanuts is an industry of long standing around Bordeaux and Marseille, France, and in certain other sections of Europe. There it is a major business, and not a by-product of the shelling industry, as in this country during recent years.

Peanuts coming from Senegal and other countries in West Africa, and known as "Rufisque," from the chief port of shipment, arrive in the shell and are chiefly crushed at Marseille. Nearly all of the oil obtained from Rufisque nuts can be made edible. The shells and skins are removed before pressing, and the first crushing is done without heat. The resultant oil, called "virgin oil," has a characteristic nutty flavor, and can be used for salad or cooking purposes without refining.<sup>28</sup> Virgin peanut oil is more extensively used in France than is olive oil. After the first cold pressing, the cakes are reground and heated and again pressed, sometimes the operation being repeated three times with profit. The first crushing after cold pressing produces a low-grade edible oil; succeeding pressings furnish inedible oil, used for industrial purposes.

Shelled peanuts from India, known as "ordinary Coromandels," from the Coromandel coast, where many are grown, are often damp when shipped, because the hulls are soaked to facilitate shelling, and frequently arrive in a rancid condition.<sup>29</sup> About half of the oil crushed from Coromandel nuts is used for soap-making and other industrial purposes and the remainder is refined and made edible.

#### REFINING

Hot-pressed peanut oil does not require refining when the product is satisfactory in a crude state, as for oil in miners' lamps and for soap stock. For most purposes, however, the deep coloring and the flavoring matter in the crude oil must be removed before the product can be used. In refining, the warm oil is treated with a solution of sodium hydroxide, which neutralizes the free fatty acids and precipitates the undesirable coloring matter. The alkali combines with the free acids and part of the oil to form a soap stock called "foots," which settles to the bottom of the refining kettle.

<sup>28</sup> Thompson, H. C., and H. S. Bailey. Peanut oil. *In* U. S. Dept. Agr. Farmers' Bul. 751, p. 5. 1920 (Revised).

<sup>29</sup> Jones, C. L., and W. Frost. The vegetable oil industry of France. *In* U. S. Dept. Com. Bur. Foreign and Dom. Com., Trade Inform. Bul. 322, p. 6. 1925.

Attempts were made by several American firms a few years ago to place cold-pressed or virgin peanut oil on the market in tins and bottles, but it is not produced commercially in the United States at present. The lack of permanent success for these undertakings does not necessarily indicate that cold-pressed (virgin) oil can not be successfully marketed. Some people prefer virgin peanut oil to olive oil, and peanut oil is considered the more easily digested of the two.

#### BLEACHING

Bleaching is accomplished by mixing the hot refined oil with a small quantity of fuller's earth which takes up a large part of the remaining color and is then filtered out. The refining and bleaching gives an undesirable odor; so the oil is next subjected to a deodorizing process, in which superheated steam is blown through the oil, which is heated in a vacuum kettle. The odors are thus carried away. The resulting product is a bland, tasteless oil.

#### USE IN OLEOMARGARINE AND SHORTENING

The chief use of peanut oil at present is in the manufacture of oleomargarine. Formerly millions of pounds of peanut oil, chiefly imported stock, were employed in the manufacture of shortening or lard substitutes (sometimes called lard compounds) to lighten the darker-colored cottonseed oil. Since the passage of the tariff act, effective September 21, 1922, however, the use of peanut oil in shortening has greatly decreased.

*Oleomargarine.*—Oleomargarine is composed of various mixtures of some of the following: Cottonseed oil, peanut oil, neutral lard, oleo oil, coconut oil, and in the better grades, butterfat or cream, churned in milk, and with salt added.

*Nut Margarine.*—"Nut margarine" is a white product, in which only true nut oils can form the base. Although not a nut botanically, the peanut has been grouped with the coconut and palm nut for this purpose. In commercial practice, comparatively few palm nuts are used in making nut margarine, leaving the field to the coconut and peanut.

To comply with the law, nut margarines must be labeled "oleo-margarine," although they contain no oleo. As colored margarines are subjected to an Internal Revenue tax of 10 cents per pound, most manufacturers place their product on the market in the white form, which is taxed only one-fourth cent per pound.<sup>30</sup>

*Use in shortening.*—Shortening, or lard compound, is made from a mixture of cottonseed oil, peanut oil, coconut oil, soybean oil, and corn oil, or from any one or any combination of these oils, blended with enough oleostearin from beef fat, neutral lard, or artificial stearin (hardened vegetable oils) to give the final product sufficient firmness when passed over a refrigerated "lard roll." Hardened vegetable oils, including peanut oil, are white, tasteless, and odorless.

#### OTHER USES OF PEANUT OIL

The better grades of refined peanut oil are used to a considerable extent in salad-oil blends. Large quantities have been employed in

<sup>30</sup> Mallory, J. A., Compiled statutes of the United States, 1913, vol. 3, p. 2791, sec. 6220. St. Paul. 1914.



making table dressings. The preparation of canned sardines has sometimes taken a considerable quantity of refined oil. As peanut oil does not absorb odors and will stand a higher temperature than olive oil, the sardines may be cooked in peanut oil, which is drained off and the fish then packed in olive oil.

The manufacture of toilet soaps utilizes some of the lower grades of peanut oil, and the "foots" or residue from the refining processes are used in soaps and lubricating oils. To a slight extent peanut oil has been used for miners' lamps, for candles, and as a substitute for olive oil in textile work.

#### IMPORTED PEANUT OIL

In the fiscal year 1923-24 nearly 14,000,000 pounds of peanut oil were brought into this country from China, including Kwantung (leased territory) and Hongkong, and more than 1,000,000 pounds came in from France, besides smaller quantities from Belgium and other countries. Peanut oil shipped from European countries is produced from peanuts grown in India, Africa, and China, and is usually refined before shipment to the United States; the oil brought directly from China is usually in the crude state (fig. 37). Imported



FIG. 37.—Imported peanut oil being loaded into tank cars from storage tanks on Pacific coast

peanut oil is used by manufacturers of oleomargarine and other products, the same as the domestic article. Large quantities of peanut oil from China are purchased by the Chinese along the Pacific coast and around New York City for cooking and soap-making. Small lots of peanut oil from China are usually shipped in 5-gallon cans, two cans packed in a wooden case; large shipments come in bulk. Wooden barrels holding 380 to 400 pounds of oil, and casks holding around 800 pounds, are the containers for peanut oil coming from Europe.

#### PEANUT CAKE AND PEANUT MEAL

Peanut cake is the flat, solid residue from the crushing of peanuts into oil in the hydraulic press. These slabs of cake (fig. 38) range from 30 to 33 inches long and are 14 inches wide and about  $\frac{3}{4}$  inch thick. The term "cake" is also applied to the large "flakes" resulting from running peanuts through the expeller press. For exporting, the product is left in cake form, but for sale in this country it is generally run through a breaker and then ground into meal of about the consistency of corn meal.

Peanut meal is now sold chiefly to manufacturers of stock feeds. When the price was cheaper it was used to a considerable extent as a fertilizer.

Both as a stock feed and as a fertilizer, peanut meal is considered to have more value than cottonseed meal; but farmers in the South have not generally recognized this fact. One of the factors limiting the growth of the peanut-oil industry in the United States a few years ago was the difficulty experienced by mills in disposing of their peanut cake and meal. Frequently during the early years of the peanut-oil industry, an increased demand for these products on the part of the Southern farmer would have reduced the supplies in the hands of the mills and raised the price the plants were willing to pay the grower for his peanuts.

The past two or three years have witnessed a greatly increased interest in peanut meal on the part of manufacturers of stock feeds in this country. As the stocks of domestic meal were gradually cut down by the small amount of crushing being done, it became necessary to get goods from abroad to supply the demand, and in 1924 over 4,000,000 pounds of peanut meal were brought to America from China, France, and England. Further imports may be expected whenever the demand exceeds domestic production.

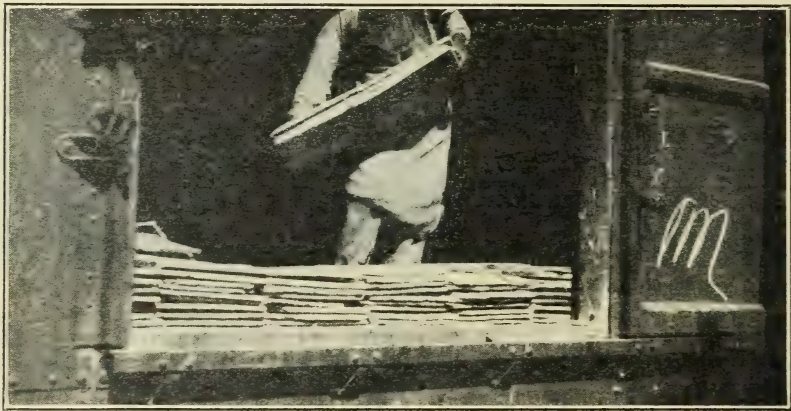


FIG. 38.—Loading a car with slabs of peanut cake

For feeding purposes peanut meal is usually sold on the basis of 45 or 46 per cent protein content, although some manufacturers sell on the basis of 41 or 43 per cent protein. A meal containing 48 to 51 per cent protein can be obtained by grinding pressed No. 1 Spanish peanut kernels alone; but, commercially, enough hulls are left with the kernels to reduce the protein content of the meal to 45 or 46 per cent and sometimes to a smaller proportion. Meal made from No. 3 Virginias will not average over 41 per cent protein content.

Peanut meal can be fed to cattle in small quantities after milking without fear of giving the milk any peculiar flavor. As hog feed, peanut meal is superior to whole peanuts, because it does not cause soft pork. The addition of peanut meal to poultry feed stimulates egg-laying and aids in bringing chickens rapidly to marketable size. As peanut meal is highly concentrated, it should be mixed with other



feeds to form a balanced ration. Experiments by the United States Department of Agriculture near Middlebury, Vt., have shown<sup>31</sup> that peanut meal, mixed with coconut meal, can replace oats in the ration of young horses, and may be found advantageous to work horses after they have become accustomed to the mixture.

Peanut cake is sometimes cracked into particles ranging in size from a pea to a hickory nut, and sold for feeding animals on open ranges. This cracked cake can be thrown on the ground without danger of serious trampling, whereas fine meal would have to be fed in a container.

The percentage of peanut oil in peanut cake depends on the amount of pressure exerted and on the length of time the cake remains in the press. Proper cooking is also necessary if a low oil content is to be obtained. Commercially, the oil content usually runs 6 to 8 per cent, averaging around 7 per cent.

As a fertilizer, the value of peanut cake is based on the quantity of nitrogen it contains. A high-grade cake contains sufficient nitrogen to yield 9 per cent of ammonia by analysis, and transactions are usually made on that basis. Peanut meal not only ranks above cottonseed meal in ammonia and nitrogen content, but contains a small percentage each of available phosphoric acid and soluble potash. Peanut meal has such high food value, however, that feeding it first, and then spreading the resultant manure on the ground is far more economical than applying it directly to the ground as a fertilizer.

#### PEANUT FLOUR

The manufacture of peanut flour from the finer grades of peanut meal, ground from pressed kernels only, was given encouragement during the war as it afforded a very satisfactory supplement to wheat flour. Peanut flour is wholesome, palatable, and nutritious. It contains over 4 times as much protein, 8 times as much fat, and 9 times as much mineral ingredients as white flour.<sup>32</sup>

In making bread with peanut flour it is customary to mix it with the wheat flour in the proportion of 2 or 3 to 10. The peanut oil in the flour lessens the quantity of shortening necessary and gives the bread a rich, nutty flavor. The chief objection to peanut flour is that it is liable to become weevily. Peanut flour is not manufactured commercially at present to any extent.

#### PEANUT HULLS

As the presence of large quantities of peanut hulls in or around shelling plants adds materially to the fire hazards, shellers are careful to avoid any accumulation of these stocks. Formerly peanut hulls were a waste product and used chiefly for fuel, often being blown out of the shelling plant directly into the firebox of the mill, and most hulls are still burned. Three tons of peanut hulls are estimated to equal 1 ton of coal in fuel value.

During the war several new uses were found for the hulls which increased their selling value. The most important was in connection with cleaning tin plate, and large quantities of ground hulls were

<sup>31</sup> Rommel G. M. and W. F. Hammond. A note on the feeding value of coconut and peanut meals for horses. U. S. Dept. Agr., Bur. Anim. Indus. Circ. 168, 2 pp. 1911.

<sup>32</sup> Bailey H. S. and J. A. Le Clerc. The peanut, a great American food. In U. S. Dept. Agr. Yearbook 1917, pp. 289-301, illus. 1918. (Yearbook separate 746).

sold to tin-plate manufacturers. After the sheets of steel are immersed in the molten tin which forms the plate, they are dipped in palm oil to prevent oxidation. Then finely ground peanut hulls were formerly dusted onto the plate to absorb the palm oil. Owing to the tendency of peanut hulls to scratch the tin surface, and also because of the fire risk, tin plate manufacturers now generally use wheat and rye middlings to absorb the oil instead of peanut hulls.

As peanut hulls consist chiefly of crude fiber, they have little feeding value in themselves, but frequently serve as a filler in stock feeds. Blackstrap molasses is added to finely ground peanut hulls to form a cattle feed called "molasses meal." This product is sacked in 100-pound burlap bags and sold to stock feeders. Some poultry feeds are partly composed of ground peanut hulls. Peanut hulls are sometimes fed back into the crusher to lower the protein content of peanut meal. Large quantities are used as a filler in fertilizer. Ground peanut hulls are also shipped to Denmark, the Netherlands, and other European countries.

Experiments have been under way looking to the utilization of peanut hulls in floor-sweeping compounds, in dynamite, and in the manufacture of linoleum.

In 1917 the Forest Products Laboratory of the Forest Service of the United States Department of Agriculture, located at Madison, Wis., carried on a number of experiments to determine the suitability of peanut hulls for use in the manufacture of paper board. In the most satisfactory tests that were run the board was composed of equal quantities by weight of disintegrated peanut hulls and old newspapers. The laboratory states that the board produced as a result of the experiments was practically as good as many samples of chip board or wall board stock on the market. If the supply of peanut hulls is adequate and very close to a mill that manufactures cheap pulp products, investigators of the Forest Products Laboratory believe that the manufacture of a cheap grade of board offers a favorable opportunity for the disposal of the hulls.

#### OTHER BY-PRODUCTS

Any peanut by-product for which a more valuable use can not be devised, can be used in the preparation of stock feed. Shriveled, broken, undersized peanuts rejected from cleaning mills are excellent for chicken feed. The seed germs removed in the process of blanching peanuts for peanut butter, and broken pieces of nuts, have been used in the manufacture of pigeon or squab feed.

During recent years chemists have developed a large number of products from peanuts, that have not reached the commercial stage. Peanut milk, peanut cream, peanut quinine, and peanut dyes are among the most commonly mentioned of these products.

#### PEANUT AS A FEED FOR HOGS

It is only since the advent of the boll weevil forced the southern farmers to look for other crops to supplement or take the place of cotton that peanuts have been planted commercially to any extent outside the States of Virginia, North Carolina, and Tennessee for other purposes than grazing or hogging-off. A large acreage is still planted in the Gulf States which farmers never expect to dig for the



nuts. When the price of peanuts is low in the fall and hogs are comparatively high, many other growers harvest their crop by hogging-off the nuts and either marketing the vines as hay or grazing them off with cattle.

In sections where peanuts are intended for forage purposes they are usually planted between rows of corn. When the corn has been harvested cattle are turned in to eat the fodder and vines while hogs fatten on the peanuts. The combination of cattle and hogs is also the best method for disposing of the crop when peanuts are planted alone for fodder. This method of harvesting is practicable only when the farms are properly fenced. When peanuts are hogged-off, most of the nitrogen that is stored in nodules on the roots remains in the soil.

By comparing the relative prices paid for peanuts and hogs and taking into consideration the cost of harvesting and picking the peanuts, a farmer can readily determine at the beginning of the season whether or not it will pay him to dig his crop for the nuts.

Hogs are often turned into the peanut fields after harvesting to clean up the pods left in the ground. When the Spanish variety is dug at the proper time the quantity of pods to be secured in this way is so small as to render the practice unprofitable. If Spanish peanuts are left too long before harvesting, however, many pods will break off and remain in the ground. Hogs can obtain considerable feed from fields where Virginia-type peanuts have been grown; and so many Georgia Runner peanuts pull free from the vines when they are being dug that hogs can be turned with profit into the fields after the Runner crop has been harvested.

Peanut-fed pork and pork products are usually of a softer texture than corn-fed pork, and for this reason hogs fed chiefly on peanuts usually sell for a somewhat lower price. Nevertheless, hams from hogs fed mainly on peanuts have become popular in several sections where many consider that they have a better flavor than hams from hogs fed strictly on corn. Although the demand for peanut-fed hams is limited, some advertised brands command a substantial premium over the corn-fed product.

### IMPORTS AND EXPORTS

Although the average consumer, buying his small sack of peanuts from a street vender or at a drug-store counter, thinks of peanuts, if he thinks of the matter at all, as being strictly a domestic product, the American peanut market has been materially influenced for many years by the importation of foreign-grown nuts.<sup>33</sup> Even as far back as the year ended June 30, 1910, a net total of 28,496,672 pounds of peanuts were brought into the United States, chiefly from Spain, France, and Japan. Receipts reached their highest point during the 12 months ended June 30, 1920, when 131,724,212 pounds were imported, most of them grown in China, although many were reexported through Japan. Of this quantity 119,817,160 pounds were

<sup>33</sup> Data obtained from consular reports to the State Department; from reports by foreign representatives to the U. S. Bureau of Foreign and Domestic Commerce and from import and export statistics issued by that bureau; from investigators of the U. S. Tariff Commission; from leading importers on the Pacific coast, and by reading their files of correspondence; from *The China Year Book*, printed and published for H. G. W. Woodhead and H. T. M. Bell, at Tientsin, China; *Trade Returns*, issued by the Inspectorate General of Customs, Shanghai, China; statistical reports of the Japan Department of Agriculture and Commerce, etc.

shelled and 11,907,052 pounds were unshelled. A complete tabulation of imports and exports of peanuts and peanut oil for the fiscal years 1913 through 1924 begins on page 88. The sharp variation in peanut imports from year to year is shown graphically in Figure 39.

#### ASIATIC IMPORTS

The increasing demand for shelled peanuts of large sizes, which was not met by American growers as it developed, was responsible for part of the activity in imported goods, and shelled peanuts have constituted the greater part of the imports during recent years. The high prices for peanuts prevailing in this country during and following the recent war, together with the high prices and exceptional demand for vegetable oils at that time, offered strong inducements both to the importers on this side of the Pacific and to the exporters in the Orient to ship peanuts and peanut oil to the United States.

Asiatic exports are of the Virginia type. The United States Department of Agriculture, in figuring domestic peanut production, has considered that a bushel of unshelled Virginias, weighing 22

#### NET IMPORTS AND EXPORTS OF PEANUTS FISCAL YEARS ENDING JUNE 30, 1913-1924.

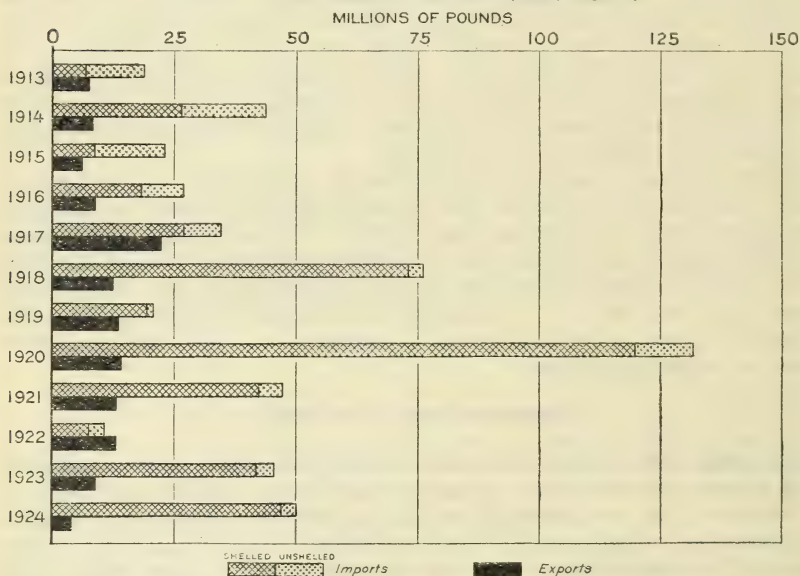


FIG. 39.—Imports reached their peak during the World War; exports, just before our entrance into the war

pounds, would shell out  $14\frac{2}{3}$  pounds, or  $66\frac{2}{3}$  per cent of the unshelled weight. The meats in Spanish-type peanuts represent a slightly larger percentage of the unshelled weight. Using that basis of comparison for all imports, however, and converting all shelled figures to unshelled equivalents, our total net imports during the fiscal year ended June 30, 1920, the year of heaviest receipts, was equivalent to 191,632,792 pounds of peanuts in the shell, a figure only a few million pounds in excess of that which would have been obtained if the non-Virginia type peanuts from Spain, Java, and other countries



had been converted on other bases. This compares with a domestic production during the 1919 season of 783,273,000 pounds. In addition to the peanuts, 165,390,713 pounds of peanut oil were imported during the fiscal year ended June 30, 1920. This called for the crushing abroad of between three and four times as many peanuts as were actually shipped here, assuming that a ton of Virginia-type peanuts will crush out 500 pounds of peanut oil. Although imports have not since reached the high figures just given, they have been sufficiently ample so that the effect of foreign peanuts on the domestic peanut industry has continued to be of distinct importance.

For a number of years China has produced the bulk of the peanuts imported into the United States, although many of the foreign peanuts appearing in our western markets in the shell are grown in Japan. The soil in which peanuts are grown in Japan often stains the pods, and to improve the external appearance and increase the market value of their goods, Japanese exporters not only wash the pods but bleach them.

Chinese peanuts are grown in a soil containing little coloring matter. Neither washing nor bleaching is therefore necessary to make the peanuts salable, but Chinese peanuts in the shell do not possess the attractive appearance of the bleached Japanese nuts. They are known as "naturals" on the Pacific coast.

#### PRINCIPAL AREAS OF PRODUCTION IN CHINA

The Province of Shantung, which has a soil particularly adapted to the growing of peanuts, is the leading peanut-producing region in China, and the Provinces of Honan and Chihli are said to rank next in importance. Some of the southern provinces also produce a considerable volume; in fact, the growing of peanuts is scattered over almost all of China. The peanuts grown in the Luanchou district, near the Luan River, are said to be superior in quality to any grown elsewhere in the Far East. The chief export towns in China are Tsingtau and Tientsin.

As China maintains no census, exact statistics of production in that country can not be given. It has been estimated by the assistant trade commissioner at Shanghai, however, that about 900,000 tons (1,800,000,000 pounds) are produced in the entire country, of which about one-third is available for export. Both peanuts and peanut oil are said to be staple articles of diet among the Chinese, and over extensive areas practically every farmer raises peanuts on a small scale.

#### HARVESTING AND GRADING METHODS IN CHINA

The soil in which peanuts are planted in China is generally sandy, and the first step in harvesting is pulling up the vines by hand. Then the whole field is shoveled over and the dirt screened in a kind of rocking cradle screen to get out every pod remaining in the ground. This operation is shown in Figure 40. The vines are not cured, as in this country, but the pods are removed at once and shelled, usually by hand.

The grading of peanuts in China is a hand-picking operation, or a combination of hand-screening and hand-picking. Small hand screens are suspended from the rafters of the picking house by a rope and are operated by coolies, who give the screens a shaking motion.

Then the nuts are poured onto a picking table, where women grade them and pick the bad kernels from the good by hand. Chinese shelled nuts are noted for their uniformity of size. Baskets of the good nuts are then inspected and poured into a pile, from which they are scooped into bags. Peanuts for export from China are usually packed in 100-pound sacks. The customary Chinese unit of measure is the picul,  $133\frac{1}{3}$  pounds, and when peanuts are put up for sale in China, straw bags holding a picul, which may already have been used for rice, are employed.

Japanese peanuts also are carefully hand picked before bagging and are remarkably uniform and attractive in appearance.

In addition to the Virginia-type peanut, which is exported and which is called by the Chinese "the foreign peanut," a considerable acreage in China is planted to a smaller variety, closely resembling our Spanish-type peanut, which was introduced into the country long before the Virginia-type nut. In addition to being eaten roasted or raw, it is steamed with salt water and kept in weak brine

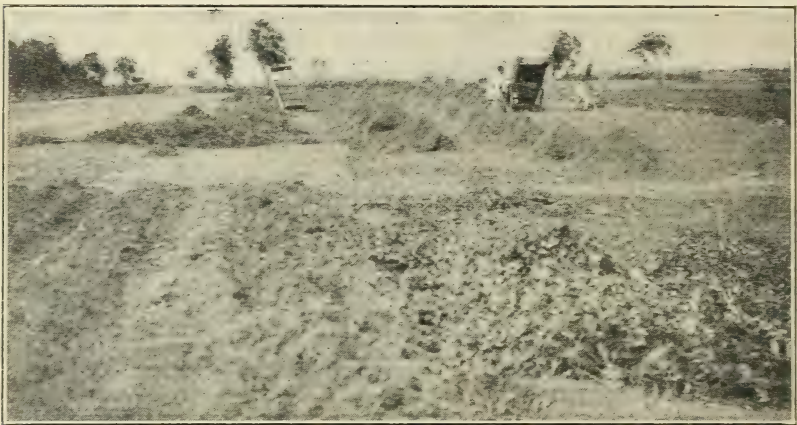


FIG. 40.—Harvesting peanuts in China. The vines have been pulled from the sandy soil, and coolies are shoveling over the entire field, screening out every pod not removed with the vines. Note the piles of dirt remaining from the screening operations

until used. Only occasional shipments of these Spanish-type peanuts from China have been made to America. For local use the Virginia-type peanuts are either roasted or salted, and large quantities are crushed for oil.

#### CHINESE PEANUT OIL

Peanut oil is said to be one of the necessities of Chinese life. It is used both as a cooking fat and for lighting. At times it is mixed with bean oil for lighting. Occasionally it serves as a lubricant. A little modern oil-crushing machinery has been introduced at large centers of export, but the bulk of the oil is still obtained by the use of crude native presses. Peanut oil is frequently pressed out in the interior of China and brought to the shipping port in woven wicker baskets lined with many coats of paper, made waterproof by smearing with pigs' blood. The size containing 160 pounds of oil is a popular one, but many other sizes, both larger and smaller, are used. Figure 41 shows a large number of baskets of crude peanut oil waiting to



be carried, on the backs of mules by two-wheeled carts, or on bamboo poles placed on the shoulders of coolies, to the port of export or to a collection center. During the period of heavy movement to the United States a large volume of peanut oil left the country in ship's ballast and other tanks. Small shipments are usually exported in second-hand kerosene cans. Two cans of  $37\frac{1}{2}$  pounds each are shipped in a case. The oil-cake residue is used both for fertilizer and for feeding to domestic animals.

The local Chinese demand for peanut oil is most accommodating in nature. The course of world prices, rather than the actual shortage or oversupply of oil and oil materials in China, is said to govern the attitude of the trade. If prices elsewhere are perceptibly higher than they are in China, exchange, tariff rates, and other things considered, peanuts and peanut oil are exported and the Chinese



FIG. 41.—Peanut oil in native wicker, paper-lined baskets, awaiting shipment from crushing point in interior of China

turn to other oils or other food products as substitutes. On the other hand, if prices abroad are not favorable to export, the Chinese population uses practically all the peanut oil that can be had. Normally, at least half the Chinese peanut crop is available for export, either as peanuts or as peanut oil.

#### IMPORTANCE OF JAPANESE TRADERS IN ORIENTAL PEANUT MARKETING

The yield in Japan, where rather exact statistics of production are maintained, has ranged between 60,000,000 and 30,000,000 pounds during the past six years. The acreage planted to peanuts in Japan has decreased steadily during recent years, as many farmers are inclined to plant their land to other crops which promise a greater profit. About 80 per cent of the crop is grown in prefectures in the immediate vicinity of the city of Tokyo. Exports leave Japan chiefly from the port of Kobe.

The Japanese are shrewd business men, and directly following the war handled a considerable share of the export traffic in Chinese peanuts, as well as the trade in Japanese-grown stock. Much of the peanut and peanut oil business in Shantung fell into the hands of Japanese traders as the successors of the Germans at Tsingtau, and large quantities of both oil and nuts were exported to the United States by way of Kobe, Japan. As a result, Kobe became one of the leading oriental peanut and peanut-oil markets, and the center in Japan of the importation, shelling, grading, and reexportation of Chinese goods. During the past few years, however, a great increase has been noted in the shipments made direct from Chinese ports, notably Tsingtau, and Kobe has been much less prominent in the peanut industry than formerly.

#### ASIATIC PEANUTS IN THE UNITED STATES

Following the armistice, high prices prevailing in American markets brought in a heavy influx of Asiatic goods. The low prices at which they were sold made the use of shelled oriental peanuts general west of the Mississippi. In addition, oriental peanuts were found in many of the leading consuming markets of the country and sold for the same purposes as Virginias—to be used in the manufacture of peanut candy, peanut butter, salted peanuts, and the like. Not only were unshelled oriental peanuts dominant in the vending trade west of the Continental Divide, but some importers are reported to have treated bleached Japanese peanuts with marble dust and chalk and sold them in eastern markets. Even before the war the peanut needs of the West for Virginia-type stock were very largely taken care of by oriental goods.

The tremendous receipts of Asiatic peanuts and peanut oil caused widespread alarm among the southern peanut growers and shippers. At their insistence, a tax of 3 cents per pound on peanuts, both shelled and unshelled, and 26 cents per gallon on peanut oil, was included in the emergency tariff act, effective on May 27, 1921. The previous import duty had been three-eighths cent per pound on unshelled and three-fourths cent per pound on shelled peanuts, and 6 cents per gallon on peanut oil. The importation of oriental peanuts and especially of peanut oil was greatly restricted by the imposition of this duty.

The duties prescribed by the emergency bill continued until September 21, 1922, when the present tariff act became effective. As provided in this bill, peanuts coming into the country now carry a duty of 3 cents per pound on unshelled and 4 cents per pound on shelled peanuts. The peanut oil duty is now 4 cents per pound.

Compared with net imports, mostly shelled, of 131,724,212 pounds for the fiscal year 1920, net imports of peanuts had fallen to 10,616,864 pounds by the fiscal year ended June 30, 1922, although the following fiscal year they advanced to over 45,000,000 pounds, and during the fiscal year 1924 to over 50,000,000 pounds. In the same way, net imports of peanut oil, which had reached a total of 165,390,713 pounds (equal to 2,757 carloads of 60,000 pounds each) in the fiscal year 1920, had fallen to 2,650,278 pounds (about 44 carloads) during the year ended June 30, 1922. In the following fiscal year they increased to 7,500,000 pounds, and in the year ended June 30, 1924, to more than 10,000,000 pounds.



## GRADES FOR SHELLED ASIATIC PEANUTS

Oriental peanuts are graded on the basis of the number of kernels of a given size in an ounce. The largest nuts commonly imported are called 28/30s, meaning 28 to 30 to the ounce. Next smaller in size are the 30/32s, which together with the 28/30s are used by salters. These large sizes constitute the bulk of the imports. The oriental size comparable to and competing with our No. 1 Virginia and No. 1 Runner peanuts is called 38/40s. These smaller peanuts are kept out, to a considerable extent, at present market quotations by the 4-cents per pound tariff.

## GRADES FOR UNSHELLED ASIATIC PEANUTS

Cleaned Asiatic peanuts have been sold in this country under various designations. At present the usual method is by the count per ounce, as with shelled goods. Most sales are made on the 12/13 to the ounce grade, corresponding in size to the domestic jumbo, and on 11/12s, which are slightly larger.

## BASIS OF SALE FOR ORIENTAL PEANUTS

Formerly a majority of the Asiatic receipts were brought to this country by importers and sold either c. i. f. (cost, including insurance and freight to) or f. o. b. a Pacific coast port. Recently an increasing tendency has been observed for the larger users of imported peanuts to buy directly from dealers in the Orient. In either case, the goods are bought subject to inspection upon arrival, for experience has shown that mold may develop in transit and that nuts occasionally heat while on the way.

When American users purchase Asiatic peanuts of brokers on the Pacific coast the terms may be net cash, with inspection at the coast port, or credit may be allowed. Trade acceptances are usually issued in the latter event. Cash in 30 days is the credit basis generally extended, although terms of 60 or 90 days have occasionally been allowed. A few large importers who regrade and recondition their shipments, sell on a straight "usual terms" basis, allowing inspection at destination. Reserve stocks of oriental peanuts are usually maintained on the Pacific coast, and goods are even carried in bond for Canadian or other foreign trade. Seattle and San Francisco are the centers of activity in oriental peanuts on the Pacific coast.

## INSPECTION OF IMPORTED STOCK

Inspection of oriental peanuts may be made for any or all of the following points: Count, rancidity, vermin, mold, splits, uniformity of size, and general condition (flavor, moisture, etc.) The samples on which the inspection is based may be obtained from 5 to 10 per cent of the bags scattered among the various layers or stacks throughout the lot, peanuts being taken from the centers as well as the sides of the bags. The percentages for count, rancidity, and splits are determined by actual count. Mold and vermin are usually detected by casual examination.

At times oriental peanuts, which have been subjected to heat or moisture, do not blanch properly but develop spotting during the roasting process. In consequence, dealers who purchase oriental peanuts for salting and confectionery purposes often make a "spot

test" before accepting the goods. This is accomplished by cooking the peanuts in vegetable oil at about 275° F., removing the skins by hand, and counting the spotted nuts.

#### IMPORTS FROM SPAIN

Spain was formerly an important source of unshelled peanuts, shipping nuts with long, jointed pods, which resemble our domestic Valencias or Tennessee Red Skins. The nuts are cleaned, graded, and packed in burlap bags containing about 110 pounds. The grades are based on the number of kernels in the shell, and the 3 to 4 grade, the largest size, brings the highest price. During the latter part of the war, the necessity for conservation of fats and oils caused the Spanish Government to place an embargo on the exportation of peanuts from that country, but light receipts have since come in at Boston, which is the chief port of entry in the United States for Spanish-grown peanuts in the shell.

Shortage of our domestic crop of shelled Spanish, and accompanying high prices, brought from Spain, during 1924, shipments totaling over 1,000,000 pounds of shelled peanuts closely resembling the Spanish peanut grown in this country. Practically all of these shelled peanuts from Spain were imported at New York City.

#### OTHER SOURCES OF SUPPLY

During the year ended June 30, 1920, 5,892,519 pounds of peanuts were imported from the Dutch East Indies, which produce a heavier more oily nut than that grown in China; and some other years in the past have also shown sizeable receipts from Java. During the year ended June 30, 1924, 1,939,211 pounds of peanuts were brought in from Java and Madura. Shipments from British Africa came to the United States during several of the war years.

India, Senegal, Nigeria, and Gambia are among the world's heaviest peanut-producing countries, but few nuts from these sources have been marketed in the United States.

#### FOREIGN OUTLETS FOR AMERICAN PEANUTS

The export trade has never claimed a very large proportion of the shipments of American peanuts, and for several years the total exports have steadily lessened. In 1924, less than 2 per cent of the total shipments of cleaned and shelled peanuts were exported, and in very few years have the exports amounted to as much as 6 per cent of the domestic movement.

Canada is by far the largest receiver of peanuts going out of the United States, taking some 85 per cent of our exports. Both Virginia and Spanish peanuts formerly went in large volume to Canadian cities, especially in the eastern half of the country, to be salted, made into peanut butter and candy, and to be sold in the shell, roasted; but recently Canada has taken principally unshelled Virginias. High prices of American peanuts in 1923 and 1924 caused Canadian importers to substitute Chinese and Java peanuts for them to a considerable extent.

During the past four years Cuba has generally ranked next in volume to Canada as an importer of American peanuts, and occasional shipments have been made to Jamaica, Bermuda, and several Latin-American countries. Practically all of these are said to be peanuts in the shell, for roasting.



The United Kingdom takes more of our peanuts than any other European country, and during the fiscal year 1919 received over 5½ million pounds; but during the fiscal year 1922 only 12 carloads were shipped there; during the following year little more than 1 carload, and for the year ended June 30, 1924, less than 1,000 pounds.

Although the colonial possessions of Great Britain in India and Africa produce large quantities of peanuts, several factors in the peanut industry have felt that the British Isles offer a worth-while opportunity to push the sale of American-grown peanuts and especially peanut products. Considerable advertising would doubtless be necessary, however, to arouse the interest of the English public. Until recently the street vender of peanuts was practically unknown in the British Isles and peanuts could be obtained only in the lower-class grocery stores; but now a fair-sized and increasing business is being done by London street peddlers in roasted peanuts, using mostly Chinese goods. The peanut is often called the "monkey nut" in England, from the fact that one of the chief uses for peanuts in the shell has been for feeding monkeys in the zoological gardens. It is generally sold to the poorer classes, and the English people generally, especially outside of London, have not learned to eat peanuts. A considerable quantity of foreign-grown peanuts are sold in Belgium, Holland, and other European countries.

Well-made American peanut butter, freshly salted peanuts, and the better grades of peanut candy deserve to be better known to the European public. Of the three, perhaps salted peanuts offer the best opportunity for the prospective exporter. For any of them, sufficient advertising to bring the product to the knowledge of the consumer would be essential for success.

### SUGGESTIONS

*Increasing demand for peanuts by making them more readily available to the housewife.*—It is believed that the sale of peanuts would be greatly stimulated if raw peanuts were made more readily available to the housewife. Attractively lithographed cartons of 1, 2, and 5 pounds of raw peanuts, both in the shell and shelled goods, placed on the grocers' shelves and counters, should find a ready sale, after suitable advertising, among those who want peanuts in greater quantities and at less expense than they can buy from street vendors or small stores. The cartons should contain a circular telling how the peanuts can be prepared at home. The expenses of a national advertising campaign might be divided by a group of shellers or cleaners who would form, for the purpose of handling this portion of their output, an association shipping under one uniform label except that the name of each individual shipper could appear in one corner. These cartons could reach the retail grocer through the same channels by which he obtains other package goods. As shelled peanuts are liable to rancidity and weevil attack in hot weather, handlers should keep them under refrigeration during the summer months.

*Use of No. 2 and No. 3 shelled peanuts in butter or candy.*—The peanut-candy and peanut-butter industries have suffered in the past from the fact that manufacturers have used so many shelled No. 2 peanuts in their products. If the raw materials are not of first quality, it is certain that the finished product can not be of the

highest class. As No. 2 split peanuts are often dirty and undesirable for use in a food product, it is recommended that No. 2 shelled peanuts be not used at all in the preparation of peanut butter or peanut candy, and that this grade be used only for stock food or for crushing into oil. No. 3 stock or culls should most certainly not be used in products sold for human consumption.

*Need for seed selection.*—The need for careful selection of seed is of paramount importance to the peanut industry, especially in the Virginia-North Carolina section. The selection of seed from varieties and strains yielding maximum quantities of well-filled, large-podded nuts, adapted to the purpose for which they are to be used, is advocated. As Spanish and Georgia Runner farmers' stock are not graded by sizes, large-podded nuts of these varieties are less important than with the Virginia type.

*Careful picking.*—Increased care on the part of the operator of the picker in keeping out trash and dirt is desirable. Every one except the operator loses when the machine is not carefully run. In addition to paying for picking dirt, the grower must assume the cost of the extra bags necessary to sack this material. The cleaner must pay for cleaning out the extra dirt, and often pays peanut prices for it.

*Need of improved ventilation and lighting in many peanut factories.*—Many of the older peanut factories in the South are poorly lighted and poorly ventilated. The installation of suitable ventilation, and painting the interior of the picking rooms with a white paint or enamel, should improve the grades put out, increase the output of the plants, and reduce the expense of lighting.

*Farmers' goods shipped in bulk should have doorway space.*—When farmers' grade peanuts are shipped in bulk, space should be left in the doorway, by suitable bracing, so that the condition and grade of the entire load can be readily determined. If loaded solid the entire length of the car, it is difficult to estimate the amount of dirt in the lower portion of the car.

*Possibility of export trade in peanut products and raw peanuts.*—Manufacturers of peanut products might do well to consider the possibility of exporting freshly salted peanuts, well-made peanut butter, and the better grades of peanut candy. It is believed that with proper advertising, foreign outlets might be found for these products. Similarly, a well-planned advertising campaign in Canada and other foreign countries would expand the demand for raw peanuts, whether in large bags or in the cartons referred to in the first paragraph of these suggestions.

#### SUMMARY

Three types of peanuts are commercially important in the United States: The large-podded Virginia, the large-podded Runner, and the small-podded Spanish.

Virginias in the shell reach the consumer in roasted form. Shelled Virginias and shelled Spanish peanuts appear on the market as salted peanuts, peanut candy, and peanut butter. Shelled Runners are used by some peanut butter and candy manufacturers as a substitute for shelled Virginias, and when prices do not justify shelling, Runners are bought by crushing mills. In years when the relative market prices of crude peanut oil and shelled stock warrant the practice, some farmers' stock Spanish peanuts are crushed. Peanut oil is



used chiefly in the manufacture of nut margarine and salad oils. Peanut meal, a by-product of the crushing mill, is valuable as stock feed.

A leading obstacle to increased distribution of raw peanuts has been that the public has had little opportunity to purchase them in any but small quantities. It is believed that many housewives will buy peanuts in the raw state, if the peanuts are brought to their attention and are available in 1 or 2 pound packages.

Grades have been recommended by the Department of Agriculture for shelled Spanish and Runner peanuts, and for farmers' Spanish stock. The food products inspection service of the department renders available to any interested party an impartial inspection when the grade of a shipment of shelled Spanish is questioned by the receiver.

The Market News Service of the Department of Agriculture issues a weekly report showing the market prices and market conditions of peanuts, and shipments of peanuts and peanut oil. These reports can be obtained without expense by anyone interested upon application to the Bureau of Agricultural Economics, United States Department of Agriculture, Washington, D. C.

STATISTICAL INFORMATION

TABLE 5.—Acreage, yield per acre, and production of peanuts harvested for nuts, 1920-1924

State	Acreage <sup>1</sup>					Yield per acre				
	1920	1921	1922	1923	1924	1920	1921	1922	1923	1924
	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Lbs.</i>	<i>Lbs.</i>	<i>Lbs.</i>	<i>Lbs.</i>	<i>Lbs.</i>
North Carolina.....	126,000	141,000	145,000	160,000	210,000	1,011	919	840	1,100	845
Georgia.....	224,000	202,000	160,000	152,000	399,000	718	660	602	512	600
Alabama.....	334,000	330,000	265,000	142,000	270,000	550	550	550	469	500
Virginia.....	133,000	153,000	130,000	124,000	120,000	830	820	600	990	650
Florida.....	90,000	80,000	72,000	80,000	47,000	625	675	625	600	710
Texas.....	174,000	195,000	172,000	122,000	75,000	720	635	560	620	450
South Carolina.....	31,000	36,000	36,000	38,000	22,000	950	825	760	800	700
Mississippi.....	17,000	19,000	18,000	15,000	14,000	600	650	675	600	480
Oklahoma.....	12,000	15,000	17,000	15,000	8,000	840	720	620	650	700
Tennessee.....	6,000	9,000	14,000	14,000	23,000	851	943	750	935	730
Arkansas.....	16,000	16,000	18,000	17,000	10,000	750	720	643	650	535
Louisiana.....	18,000	18,000	18,000	17,000	9,000	600	487	600	450	355
Total United States.....	1,181,000	1,214,000	1,005,000	896,000	1,207,000	712.5	683.1	630.0	722.9	624.9

State	Production				
	1920	1921	1922	1923	1924
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
North Carolina.....	127,386,000	129,579,000	121,800,000	176,000,000	177,450,000
Georgia.....	160,832,000	133,320,000	96,320,000	77,824,000	239,400,000
Alabama.....	183,700,000	181,500,000	112,750,000	66,598,000	135,000,000
Virginia.....	110,390,000	125,460,000	78,000,000	122,760,000	78,000,000
Florida.....	56,250,000	54,000,000	45,000,000	48,000,000	33,370,000
Texas.....	125,280,000	123,825,000	96,320,000	75,640,000	33,750,000
South Carolina.....	29,450,000	29,700,000	27,360,000	30,400,000	14,300,000
Mississippi.....	10,200,000	12,350,000	12,150,000	9,000,000	6,720,000
Oklahoma.....	10,080,000	10,800,000	10,540,000	9,750,000	5,600,000
Tennessee.....	5,106,000	8,487,000	10,500,000	13,090,000	16,790,000
Arkansas.....	12,000,000	11,520,000	11,574,000	11,050,000	5,350,000
Louisiana.....	10,800,000	8,766,000	10,800,000	7,650,000	3,195,000
Total United States.....	841,474,000	829,307,000	633,114,000	647,762,000	748,925,000

<sup>1</sup> Represents the acreage harvested for nuts. Acreage interplanted with corn or other crops when included in this table is reduced to equivalent solid acres.

TABLE 6.—*Production and acreage in leading peanut-growing countries*

Country	Year	Production	Acreage
		<i>Pounds</i>	<i>Acres</i>
British India, total <sup>1</sup> .....	1924	3,151,680,000	2,773,000
Madras.....	1924	2,027,200,000	1,839,000
Burma.....	1924	369,600,000	390,000
Bombay (including Indian States).....	1924	730,240,000	348,000
Hyderabad.....	1924	24,640,000	134,000
China.....	1924	1,800,000,000	.....
Japan.....	1922	36,440,000	20,000
Dutch East Indies.....	1924	316,608,000	475,326
Spain.....	1924	47,120,000	<sup>2</sup> 20,000
Senegal.....	1921	764,512,000	1,000,000
Nigeria.....	1924	224,000,000	.....
French Sudan.....	1918	224,000,000	500,000
Gambia.....	1923	<sup>4</sup> 140,143,360	<sup>3</sup> 120,000
French Guinea.....	1920	22,400,000	30,000
Portuguese East Africa.....	1924	<sup>4</sup> 60,000,000	.....
Egypt.....	1923	29,762,000	19,500
Argentina.....	1923	81,140,000	82,677
Paraguay.....	1923	21,450,000	.....
United States.....	1924	748,925,000	1,207,000

Figures taken chiefly from official sources or reports by consular agents.

<sup>1</sup> Covering 94 per cent of peanut area in British India.

<sup>2</sup> 1922.

<sup>3</sup> 1921.

<sup>4</sup> Exports only.

TABLE 7.—*Imports of peanuts into the United States, by countries of origin, for years ended June 30, 1913 to 1924*

Country	1913		1914		1915	
	Shelled	Unshelled	Shelled	Unshelled	Shelled	Unshelled
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
China.....	455,197	351,170	3,589,879	2,132,338	3,958,412	1,945,942
Japan.....	1,141,869	8,250,150	583,236	10,432,527	1,878,675	7,640,585
Hongkong.....	101,286	65,897	2,975,091	1,622,148	900,623	538,784
Kwantung (leased territory).....	480	210	949,225	.....	638,400	.....
Canada (oriental imports).....	.....	10,000	52,197	40	17,946	.....
Java and Madura.....	768,724	35,483	3,048,600	318,218	1,595,059	672,367
Spain.....	2,591,157	3,477,497	5,689,238	2,195,106	167,977	2,696,567
England.....	230,771	87,112	1,475,278	161,396	.....	201,741
France.....	1,324,577	.....	7,337,923	154,343	397,339	106,040
Germany.....	55,663	.....	656,765	330,827	20,073	184,997
Netherlands.....	131,621	.....	488,885	.....	10,080	.....
Mexico.....	70	4,061	.....	15,206	397	87,187
British East Africa.....	.....	.....	107,335	.....	.....	.....
Other countries.....	.....	.....	123,506	110,482	58,710	466,772
Total.....	6,801,415	12,281,580	27,077,158	17,472,631	9,643,691	14,540,982
Reexports.....	170,503	126,120	555,327	243,905	1,153,168	34,836
Net imports.....	6,630,912	12,155,460	26,521,831	17,228,726	8,490,523	14,506,146
Total net imports shelled and unshelled.....	18,786,372	.....	43,750,557	.....	22,996,669	.....



TABLE 7.—Imports of peanuts into the United States, by countries of origin, for years ended June 30, 1913 to 1924—Continued

Country	1916		1917		1918	
	Shelled	Unshelled	Shelled	Unshelled	Shelled	Unshelled
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
China.....	3,842,292	833,847	5,757,958	191,239	9,219,420	210,812
Japan.....	11,992,113	6,738,948	15,102,833	6,593,453	54,394,163	2,514,183
Hongkong.....	1,664,583	8,873	6,201,755	195,946	7,910,520	113,042
Kwantung (leased territory).....	112,000	-----	-----	100,000	290,000	-----
Canada (oriental imports).....	20,378	12,500	10,000	-----	54,755	-----
Java and Madura.....	-----	-----	11,474	-----	708,237	77,395
Spain.....	5,280	1,405,310	36,960	667,525	-----	162,865
England.....	-----	100	-----	1,630	-----	-----
France.....	-----	-----	8,580	55,115	-----	-----
Mexico.....	502	18,970	-----	-----	-----	72
British West Africa.....	1,682,888	-----	-----	-----	-----	-----
Other countries.....	72,796	2,300	51,188	1,104	785,120	72,378
Total.....	19,392,832	9,020,848	27,180,748	7,806,012	73,362,215	3,150,747
Reexports.....	1,230,080	343,541	285,973	52,660	328,363	55,811
Net imports.....	18,162,752	8,677,307	26,894,775	7,753,352	73,033,852	3,094,936
Total net imports shelled and unshelled.....	26,840,059	-----	34,648,127	-----	76,128,788	-----

Country	1919		1920		1921	
	Shelled	Unshelled	Shelled	Unshelled	Shelled	Unshelled
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
China.....	428,996	114,818	12,329,271	848,580	5,190,220	1,642,077
Japan.....	7,287,554	862,737	89,739,388	8,399,690	35,895,990	2,434,963
Hongkong.....	1,007,068	5,596	6,951,545	1,774,415	360,248	609,678
Kwantung (leased territory).....	400,000	-----	3,057,170	-----	316,700	304,635
Canada (oriental imports).....	1,884,830	10,265	1,252,388	123,900	3,750	246,601
Java and Madura.....	18,750	-----	5,420,830	471,689	520,914	422
British India.....	7,668,259	-----	-----	-----	-----	-----
Spain.....	-----	385,098	88,069	35,078	-----	109,375
England.....	-----	-----	746,157	560	-----	-----
France.....	-----	-----	500	-----	-----	2,387
Netherlands.....	-----	-----	389,024	-----	242,997	-----
Mexico.....	-----	-----	-----	384,734	-----	-----
British East Africa.....	766,623	-----	143,576	-----	-----	-----
Other countries.....	-----	65,707	226,507	29,352	97,215	11,058
Total.....	19,462,080	1,444,221	120,344,425	12,067,998	42,628,034	5,361,196
Reexports.....	90,943	35,965	527,265	160,946	190,020	444,116
Net imports.....	19,371,137	1,408,256	119,817,160	11,907,052	42,438,014	4,917,080
Total net imports shelled and unshelled.....	20,779,393	-----	131,724,212	-----	47,355,094	-----

Country	1922		1923		1924	
	Shelled	Unshelled	Shelled	Unshelled	Shelled	Unshelled
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
China.....	505,685	1,435,320	28,350,727	2,462,095	42,043,532	3,055,120
Japan.....	6,658,036	1,833,183	12,102,549	999,204	2,358,318	409,590
Hongkong.....	44,622	55,234	127,601	47,607	60,522	66,589
Kwantung (leased territory).....	1,980	-----	41,000	-----	536,156	50,50
Canada (oriental imports).....	1,000	-----	477,438	20,000	160,400	10,500
Java and Madura.....	-----	-----	692,389	-----	1,936,457	2,754
Spain.....	54,725	22,000	594,219	303,593	1,146,638	11,110
Germany.....	50,229	-----	37,036	-----	-----	-----
Netherlands.....	-----	-----	-----	22,046	-----	-----
Mexico.....	-----	13,570	-----	20	-----	60
Other countries.....	110,850	16,787	15,766	7,574	67,723	4,851
Total.....	7,427,127	3,376,094	42,438,725	3,862,139	48,309,746	3,560,624
Reexports.....	139,665	46,692	787,964	-----	1,803,026	-----
Net imports.....	7,287,462	3,329,402	-----	-----	-----	-----
Total net imports shelled and unshelled.....	10,616,864	-----	45,512,900	-----	50,067,344	-----

TABLE 8.—Exports of peanuts from the United States, by countries of destination, for years ended June 30, 1913 to 1924. Shelled and unshelled grouped together

Country	1913	1914	1915	1916	1917	1918
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Canada	5,367,717	6,194,621	4,499,418	7,259,040	12,459,970	10,907,816
Cuba	108,402	59,264	54,693	151,677	359,376	524,929
Jamaica	101,443	87,090	88,699	83,410	106,729	18,377
Bermuda	70,824	87,514	72,908	70,456	102,421	45,087
Mexico	87,779	80,775	7,643	19,425	126,103	50,132
Panama	98,026	102,608	70,256	105,742	186,143	110,368
British Guiana	403,301	278,734	179,463	384,185	594,504	179,226
Dutch Guiana	127,740	163,138	153,966	157,889	243,291	28,178
England	632,595	156,624	224,870	40,917	7,797,682	350,979
France	40,954	602,375	303,071			
Netherlands	24,038			2,015		
Germany	334	200				
Other countries	238,228	241,874	220,089	394,674	437,078	273,117
Total	7,301,381	8,054,817	5,875,076	8,669,430	22,413,297	12,488,209

Country	1919	1920	1921	1922	1923	1924
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Canada	6,611,829	7,557,636	10,555,932	10,953,523	7,253,542	3,403,448
Cuba	685,426	839,348	1,455,524	588,078	513,767	68,797
Jamaica	33,357	53,165	146,174	167,882	116,472	76,671
Bermuda	41,953	59,738	82,246	67,856	69,077	68,891
Mexico	52,322	29,304	54,462	-49,070	38,849	31,602
Panama	96,499	93,022	113,838	78,883	113,594	64,334
British Guiana	144,120	209,978	246,954	299,648	196,459	30,552
Dutch Guiana	84,469	12,883	6,715	97,871	115,107	5,743
England	5,687,487	3,723,667	86,274	330,183	28,777	909
Netherlands	24,085	1,145,514	53,000		5,500	
Other countries	135,113	413,701	348,298	224,728	265,145	242,967
Total	13,596,660	14,137,956	13,149,417	12,857,722	8,716,289	3,993,914

TABLE 9.—Imports of peanut oil into the United States by countries of origin, for years ended June 30, 1913 to 1924

Country	1913	1914	1915	1916	1917	1918
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
China	83,183	756,120	1,081,972	2,076,233	4,434,555	24,930,788
Japan	450	750	488	5,307,570	14,284,163	34,732,455
Hongkong	511,815	698,438	634,868	812,932	1,654,395	685,155
Kwantung (leased territory)					738,750	1,384,530
Canada (oriental imports)			442			94,027
France	3,958,110	4,296,487	2,807,332	1,757,430	1,318,177	
Netherlands	1,801,260	1,447,515	1,535,340	767,640	134,220	11,250
England	48,293	29,542	2,580	318,795	11,595	
Germany	2,496,277	2,752,522	301,935			
Belgium	55,320	1,928				
Dutch East Indies				450	108,840	325,440
Other countries	12,915	45,218	31,831	22,373	11,715	2,025
Total	8,967,623	10,028,520	6,396,788	11,063,423	22,696,410	62,165,670
Reexports	11,272	65,835	102,810	130,065	165,292	128,610
Net imports	8,956,351	9,962,685	6,293,978	10,933,358	22,531,118	62,037,060

Country	1919	1920	1921	1922	1923	1924
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
China	21,936,142	41,648,303	3,274,800	1,710	2,905,486	11,774,839
Japan	47,904,225	108,581,729	11,256,503	6,248	64,292	4,800
Hongkong	1,404,442	12,840,000	2,355,764	1,342,921	1,661,898	1,810,892
Kwantung (leased territory)	13,437,941	486,735	675,000		623,200	154,735
Canada (oriental imports)	530,000	661,005	59,130	30		45
France			418,770	1,093,718	768,878	1,169,758
Netherlands			119,003	38,731	276,672	65,687
England		156,803		394,718	1,240,624	
Germany					5,256	
Belgium		214,598			5,265	77,109
Dutch East Indies	232,680					
Other countries		892,950	3,810			
Total	85,445,430	165,482,723	18,162,780	2,878,076	7,551,511	15,057,865
Reexports	56,760	92,010	238,305	227,798	36,494	4,878,355
Net imports	85,388,670	165,390,713	17,924,475	2,650,278	7,515,017	10,179,510



TABLE 10.—Exports of peanut oil from the United States by countries of destination for years ended June 30, 1920 to 1924

Countries	1920	1921	1922	1923	1924
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Canada.....	51, 187	200, 892	276, 993	113, 762	135, 589
Mexico.....	1, 368	310, 970	142, 995	5, 283	1, 095
Cuba.....	321	27, 006	120, 003	1, 750	2, 532
Norway.....	835, 001	134, 289	959, 884	19, 502	.....
Sweden.....	162, 750	275, 792	214, 756	.....	.....
Denmark.....	61, 625	18, 750	81, 012	.....	.....
United Kingdom.....	1, 559, 873	564, 424	.....	.....	.....
France.....	1, 946, 931	57, 216	.....	.....	.....
Netherlands.....	80, 000	97	.....	.....	.....
Belgium.....	128, 140	.....	.....	.....	.....
Other countries.....	95, 090	5, 207	6, 578	49, 011	28, 313
Total.....	4, 922, 286	1, 594, 643	1, 802, 221	189, 308	167, 529

DISTRIBUTION OF AMERICAN-GROWN PEANUTS

Table 11 shows the shipments of cleaned (unshelled) and shelled peanuts from October 25, 1920, to October 26, 1924, by sections and States; and Table 12 shows the original destinations of these shipments, by sections of origin, and States of destination. These tables are based upon weekly shipment records received from over 200 freight agents and steamship officials, covering all points in the South where cleaning or shelling plants are located, and edited and tabulated by the Bureau of Agricultural Economics. As a very large volume of peanuts move in less than car lots, the figures were reduced to approximate car-lot equivalents, on the basis of 25,000 pounds for a car of cleaned peanuts, 28,000 pounds for a car of shelled peanuts from the Virginia-North Carolina section, and 30,000 pounds for cars of shelled peanuts from the other two sections. The grouping of the shipments from the Virginia-North Carolina section into shelled and unshelled is subject to errors. The last week in October was arbitrarily taken as the break between the old and new seasons; it is fairly correct for the Virginia-North Carolina section and Texas, but new peanuts are often shipped from the Southeast more than a month earlier than that date.

During the 1923-24 season, shipments of cleaned and shelled peanuts were made from the following points, in descending order of importance within each State.

VIRGINIA-NORTH CAROLINA SECTION

*Virginia.*—Suffolk, Petersburg, Franklin, Wakefield, Boykins, Stony Creek, Waverly, Zuni, Disputanta, and Emporia.

*North Carolina.*—Edenton, Enfield, Plymouth, Ahoskie, Tarboro, and Lewiston.

*Tennessee.*—Nashville.

SOUTHEASTERN STATES

*Georgia.*—Albany, Cordele, Savannah, Donalsonville, Valdosta, Arlington, Fort Gaines, Edison, Newnan, Dawson, Greensboro, Camilla, Sylvester, Coleman, and Bainbridge.

*Alabama.*—Dothan, Enterprise, Troy, Montgomery, Samson, Eufaula, Brundidge, Abbeville, Midland City, and Andalusia.

*South Carolina.*—Allendale, Charleston, and Denmark.

*Florida.*—Malone, Greenwood, and Campbellton.

SOUTHWESTERN STATES

*Texas.*—Fort Worth, DeLeon, Denison, Tyler, Abilene, and Houston.

In one or more of the three preceding seasons, shipments of cleaned or shelled peanuts were made from the following points from which they was no movement during the 1923-24 season:

Virginia.—Smithfield.

North Carolina.—Hertford, Scotland Neck, and Weldon.

Georgia.—Blakely, Columbus, Dublin, Quitman, Richland, and Sandersville.

Alabama.—Birmingham, Headland, Mobile, and Tuscaloosa.

South Carolina.—Columbia.

Florida.—Madison.

Texas.—Cleburne, Granbury, Henderson, Texarkana, and Weatherford.

California.—Fontana.

Destinations of the shipments of peanuts from plants in Philadelphia and St. Louis are unavailable; these shipments have also been omitted from the record of movement by shipping points. The shipments to certain States on the seaboard include some peanuts destined for export or for shipment elsewhere in this country. Peanuts going to places in which shelling or cleaning plants are located have been eliminated when from other points in the same section or from the Southeastern States to Virginia and North Carolina, because of the possibility of duplication in the movement from those points. However, Suffolk, Petersburg, Norfolk, and other places in the peanut belt probably utilize 1,500 carloads of farmers' goods and many cars of shelled stock from other points, in manufacturing salted peanuts, peanut candy, and peanut butter.

TABLE 11.—Shipments of cleaned and shelled peanuts, by States, for seasons 1920-21 to 1923-24, expressed in car-lot equivalents

[“Sh.” refers to “shelled,” and “unsh.” refers to “unshelled”]

VIRGINIA-NORTH CAROLINA SECTION

State	1920-21			1921-22			1922-23			1923-24		
	Sh.	Unsh.	Total	Sh.	Unsh.	Total	Sh.	Unsh.	Total	Sh.	Unsh.	Total
Virginia.....	<i>Cars</i> 1,855	<i>Cars</i> 3,792	<i>Cars</i> 5,647	<i>Cars</i> 2,573	<i>Cars</i> 2,823	<i>Cars</i> 5,396	<i>Cars</i> 1,831	<i>Cars</i> 2,433	<i>Cars</i> 4,264	<i>Cars</i> 2,392	<i>Cars</i> 2,981	<i>Cars</i> 5,373
North Carolina.....	183	606	789	317	579	896	370	371	741	547	450	997
Tennessee.....	3	48	51	-----	37	37	4	42	46	2	59	61
Total.....	2,041	4,446	6,487	2,890	3,439	6,329	2,205	2,846	5,051	2,941	3,490	6,431

SOUTHEASTERN STATES

State	1920-21	1921-22	1922-23	1923-24
Georgia.....	<i>Cars</i> 2,483	<i>Cars</i> 1,985	<i>Cars</i> 1,643	<i>Cars</i> 1,380
Alabama.....	579	751	783	981
South Carolina.....	178	202	175	192
Florida.....	127	104	143	77
Total.....	3,367	3,042	2,744	2,630

SOUTHWESTERN STATES

Texas.....	447	757	443	383
California.....	6	0	0	0
Total.....	453	757	443	383
Grand total, United States.....	10,307	10,128	8,238	9,444



## DISTRIBUTION OF DOMESTIC CRUDE PEANUT OIL

Table 14 shows the original destinations by States, of the shipments of crude peanut oil from October 25, 1920 to October 26, 1924. This table is based upon weekly shipment records received from over 50 freight agents and steamship officials, covering all points in the South where crushing plants are located, edited and tabulated by the Bureau of Agricultural Economics. The last week in October was arbitrarily taken as the break between the old and new seasons. The figures are all reduced from pounds to tank-car equivalents on the basis of 60,000 pounds of peanut oil equalling one tank car. It should be remembered that in addition to the movement of domestic peanut oil, a very large volume was imported, for which destinations are not available. Therefore, the figures given here can not be considered as representing the total consumption of crude peanut oil by the States listed.

During the 1923-24 season, shipments of crude peanut oil were made from the following points, in descending order of importance within each State.

## VIRGINIA-NORTH CAROLINA SECTION

*Virginia.*—Suffolk.

## SOUTHEASTERN STATES

*Alabama.*—Dothan, Eufaula, Ozark, Enterprise, and Luverne.

*Georgia.*—Cordele, Albany, and Donalsonville.

## SOUTHWESTERN STATES

*Texas.*—DeLeon and Denison.

In one or more of the three preceding seasons, shipments of crude peanut oil were made from the following points, from which there was no movement during the 1923-24 season:

*North Carolina.*—Hertford.

*Alabama.*—Andalusia, Brundidge, Headland, Midland City, Mobile, Montgomery, and Selma.

*Georgia.*—Arlington, Bainbridge, Camilla, Coleman, Meigs, Pelham, Richland, Savannah, and Valdosta.

*Florida.*—Gainesville, Greenwood, Madison, and Malone.

*South Carolina.*—Charleston.

*Texas.*—Cleburne, Houston, Pearsall, Weatherford, and Wills Point.

TABLE 12.—Distribution by States of shipments of cleaned and shelled peanuts, from each producing section, as shown by original billings, expressed in car-lot equivalents

(Va.-N. C. means Virginia-North Carolina section; S. E. means Southeastern States; S. W. means Southwestern States; "Sh.", "Unsh.", and "Sh.-Unsh." refer to "shelled," "unshelled," and "shelled and unshelled," respectively)

State	1920-21					1921-22				
	Va.-N. C.		S. E.	S. W.	Total	Va.-N. C.		S. E.	S. W.	Total
	Sh.	Unsh.	Sh.	Sh.	Sh.-Unsh.	Sh.	Unsh.	Sh.	Sh.	Sh.-Unsh.
	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>
Alabama	9	76	1		86	3	43	1		47
Arizona	1				1		2			2
Arkansas	4	53	3	3	63	1	22	4	3	30
California	4	25	27	33	89	11	15	2	63	91
Colorado	7	21	18	32	78	9	47		34	90
Connecticut	5	18			23	1	28	2		31
Delaware		2			2		1			1
District of Columbia	11	34			45	5	28			33
Florida	6	91	4		101	9	69	6		84
Georgia	14	108	49		171	4	70	66		140
Idaho				4	4	1	3			4
Illinois	210	297	841	143	1,491	446	285	720	274	1,725
Indiana	41	81	92		214	42	62	98	5	207
Iowa	30	102	26	27	185	28	82	33	36	179
Kansas	3	38	16	14	71	6	28	12	25	71
Kentucky	13	58	35		106	10	37	38		85
Louisiana	16	113	6	1	136	14	67	7	2	90
Maine	13	15			28	10	20	2		32
Maryland	44	112	1		157	44	89	1		134
Massachusetts	246	231	287		764	341	149	262		752
Michigan	64	128	71	1	264	104	101	74		279
Minnesota	40	207	55	4	306	64	141	61	2	268
Mississippi	2	58	5		65	2	32	5		39
Missouri	24	98	315	42	479	78	110	209	108	505
Montana	2	10		2	14	1	9			11
Nebraska	6	40	29	12	87	13	33	24	31	101
New Hampshire										
New Jersey	6	21	6		33	11	23	5		39
New York	415	429	346		1,190	454	367	378		1,199
North Carolina	27	143	7		177	15	104	14		133
North Dakota	3	20	2		25	5	11			16
Ohio	171	301	584	2	1,058	506	244	493		1,243
Oklahoma	6	33		32	71	2	20		31	53
Oregon				19	19	1	5		22	28
Pennsylvania	299	534	319		1,152	319	410	282		1,011
Rhode Island	7	26	8		41	6	23	6		35
South Carolina	6	127	12		145	6	90	13		109
South Dakota	8	26			34	4	18			22
Tennessee	26	130	52		208	21	48	59		128
Texas	11	98		40	149	5	54		54	113
Utah	2	17	2	18	39	3	25	1	22	51
Vermont	8	2	12		22	12	1	5		18
Virginia	69	113			182	81	71			152
Washington	2	13	1	11	27	19	28	3	33	83
West Virginia	20	40	1		61	8	27	2		37
Wisconsin	47	183	37	7	274	59	141	59	8	267
Total United States	1,948	4,272	3,270	447	9,937	2,784	3,283	2,947	754	9,768
Canada	87	170	95	3	355	101	157	90		348
Grand total	2,035	4,442	3,365	450	10,292	2,885	3,440	3,037	754	10,116



TABLE 12.—Distribution by States of shipments of cleaned and shelled peanuts, from each producing section, as shown by original billings, expressed in car-lot equivalents—Continued

State	1922-23					1923-24				
	Va.-N. C.		S. E.	S. W.	Total	Va.-N. C.		S. E.	S. W.	Total
	Sh.	Unsh.	Sh.	Sh.	Sh.-Unsh.	Sh.	Unsh.	Sh.	Sh.	Sh.-Unsh.
	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>
Alabama.....	11	67	1		79	10	91	1		102
Arizona.....		2			2	1	3			4
Arkansas.....	6	22	1	1	30	8	28	3	3	42
California.....	21	7	69	15	112	5	4	29	23	61
Colorado.....	6	18	1	18	43	16	36	2	25	79
Connecticut.....		15			15	1	25	3		29
Delaware.....		1			1		1			1
District of Columbia.....	11	25			36	18	24			42
Florida.....	8	88	3		99	6	100	6		112
Georgia.....	9	104	61		174	7	107	52		166
Idaho.....		1			1		3		2	5
Illinois.....	288	159	737	124	1,308	429	196	838	114	1,577
Indiana.....	42	38	78		158	50	61	60		171
Iowa.....	23	65	26	33	147	39	76	38	22	175
Kansas.....	3	25	12	15	55	5	32	9	8	54
Kentucky.....	13	31	33		77	15	49	29		93
Louisiana.....	10	90	5	6	111	13	81	4	5	103
Maine.....	6	12			18	11	15			26
Maryland.....	50	72	1		123	22	118	1		141
Massachusetts.....	280	126	169		575	348	129	154		631
Michigan.....	59	81	58	1	199	98	114	38		250
Minnesota.....	40	127	46	6	219	53	167	48	3	271
Mississippi.....	1	41	11		53	6	57	7		70
Missouri.....	67	56	186	99	408	82	99	217	63	461
Montana.....		10			10	1	11		1	13
Nebraska.....	3	29	18	29	79	22	33	30	20	105
New Hampshire.....		1			1					
New Jersey.....	24	8	1		33	49	11	5		65
New York.....	464	323	391	1	1,179	527	373	376		1,276
North Carolina.....	16	110	13		139	22	119	10		151
North Dakota.....	4	13	2		19	3	16	1		20
Ohio.....	214	177	424		815	326	210	334		870
Oklahoma.....	8	22	1	24	55	10	32	7	16	65
Oregon.....	1	4	11	2	18		4	7	2	13
Pennsylvania.....	333	324	233		890	508	390	194		1,092
Rhode Island.....	3	19	1		23	10	18	3		31
South Carolina.....	7	85	8		100	6	99	6		111
South Dakota.....	2	15			17	6	24	1	1	32
Tennessee.....	21	64	66		151	24	73	62	1	160
Texas.....	8	77		42	127	16	111	7	38	172
Utah.....	4	8		16	28	1	21		14	36
Vermont.....	6	2	5		13	7	1	1		9
Virginia.....	61	69			130	78	91			169
Washington.....	3	13	15	8	39	5	12	2	17	36
West Virginia.....	9	26	1		36	10	25			35
Wisconsin.....	34	76	49	1	160	51	117	43	3	214
Total United States.....	2,179	2,748	2,737	441	8,105	2,925	3,407	2,628	381	9,341
Canada.....	20	94	7		121	9	79			88
Grand total.....	2,199	2,842	2,744	441	8,226	2,934	3,486	2,628	381	9,429

TABLE 13.—Shipments of cleaned and shelled peanuts, from each producing section, to 25 leading destinations<sup>1</sup> (based on 1923-24 movement), as shown by original billings, for seasons 1920-21 to 1923-24, expressed in car-lot equivalents

(Va.-N. C. means Virginia-North Carolina section; S. E. means Southeastern States; S. W. means Southwestern States; "Sh.", "Unsh.", and "Sh.-Unsh." refer to "shelled," "unshelled," and "shelled and unshelled," respectively)

City	1920-21					1921-22				
	Va.-N. C.		S. E.	S. W.	Total	Va.-N. C.		S. E.	S. W.	Total
	Sh.	Unsh.	Sh.	Sh.	Sh.-Unsh.	Sh.	Unsh.	Sh.	Sh.	Sh.-Unsh.
	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>
Chicago, Ill.	198	261	833	142	1,434	432	248	698	274	1,652
New York, N. Y.	224	320	206		750	303	261	203		767
Philadelphia, Pa. <sup>2</sup>	66	297	254		617	112	215	220		547
Boston, Mass.	204	205	238		647	270	113	215		598
Cleveland, Ohio	53	87	206	1	347	254	63	187		504
Pittsburgh, Pa.	111	69	34		214	117	53	40		210
Kansas City, Mo.	18	56	134	30	238	31	44	87	61	223
Cincinnati, Ohio	9	65	125		199	52	56	153		261
St. Louis, Mo.	1	26	134	8	169	40	51	104	31	226
Minneapolis, Minn.	12	106	22	1	141	30	69	42		141
Milwaukee, Wis.	33	113	26	5	177	47	76	51	4	178
Toledo, Ohio	44	44	103	1	192	125	34	47		206
Baltimore, Md.	43	94			137	42	75	1		118
Richmond, Va.	49	54			103	73	30			103
Detroit, Mich.	23	57	17		97	38	42	19		99
Memphis, Tenn.	10	90	29		129	15	28	44		87
Indianapolis, Ind.	23	33	60		116	25	18	73	5	121
Atlanta, Ga.	9	31	40		80	2	15	46		63
Louisville, Ky.	7	43	33		83	8	25	38		71
Columbus, Ohio	11	33	65		109	22	30	48		100
Jacksonville, Fla.	2	55	3		60	4	47	4		55
Denver, Colo.	7	17	18	30	72	9	49		32	81
New Orleans, La.	15	79	6		100	12	52	7		71
Omaha, Nebr.	6	24	13	4	47	11	21	15	5	52
Buffalo, N. Y.	22	23	11		56	15	24	15		54

City	1922-23					1923-24				
	Va.-N. C.		S. E.	S. W.	Total	Va.-N. C.		S. E.	S. W.	Total
	Sh.	Unsh.	Sh.	Sh.	Sh.-Unsh.	Sh.	Unsh.	Sh.	Sh.	Sh.-Unsh.
	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>	<i>Cars</i>
Chicago, Ill.	283	136	720	119	1,258	421	167	812	109	1,509
New York, N. Y.	304	239	242		785	321	276	265		862
Philadelphia, Pa. <sup>2</sup>	162	175	194		531	234	230	167		631
Boston, Mass.	214	102	134		450	258	104	117		479
Cleveland, Ohio	73	37	157		267	133	44	118		295
Pittsburgh, Pa.	104	44	27		175	171	45	20		236
Kansas City, Mo.	31	26	74	66	197	49	49	98	37	233
Cincinnati, Ohio	29	38	161		228	25	56	139		220
St. Louis, Mo.	35	24	92	24	175	26	33	85	22	166
Minneapolis, Minn.	23	59	33	2	117	32	82	32	2	148
Milwaukee, Wis.	18	45	45	1	109	33	57	39	3	132
Toledo, Ohio	41	31	43		115	74	29	24		127
Baltimore, Md.	49	62	1		112	21	103	1		125
Richmond, Va.	55	32			87	65	42			107
Detroit, Mich.	21	42	17		80	31	61	8		100
Memphis, Tenn.	14	43	39		96	21	45	32	1	99
Indianapolis, Ind.	19	13	58		90	24	19	43		86
Atlanta, Ga.	5	17	50		72	3	26	44		73
Louisville, Ky.	10	18	32		60	14	30	29		73
Columbus, Ohio	18	25	29		72	22	20	28		70
Jacksonville, Fla.	2	51	2		55	4	58	5		67
Denver, Colo.	6	16	1	17	40	14	24	2	24	64
New Orleans, La.	7	63	5		75	11	48	4		63
Omaha, Nebr.	2	15	6	11	34	14	20	14	12	60
Buffalo, N. Y.	18	23	15		56	23	30	6		59

<sup>1</sup> Three points not shown in this table are actually among the 25 leading destinations, but are omitted to avoid revealing the volume of purchases of individual firms.

<sup>2</sup> Includes Camden, N. J.

TABLE 14.—Distribution by States of shipments of domestic crude peanut oil, as shown by original billings, for seasons 1920-21 to 1923-24, expressed in car-lot equivalents

State	1920-21	1921-22	1922-23	1923-24
	Cars	Cars	Cars	Cars
California.....			1	
Georgia.....	10	26		1
Illinois.....	10	11	10	5
Kentucky.....		24		
Louisiana.....	64	73	16	9
Maryland.....			1	
Massachusetts.....		1		
Missouri.....		5		22
New Hampshire.....	10			
New Jersey.....	15	17	7	9
New York.....	18	16	10	
North Carolina.....	6	10		
Ohio.....	114	141	11	3
Pennsylvania.....	3		1	
Tennessee.....	15	18		
Texas.....	8	20	7	7
Virginia.....	55	39	1	1
Destinations not known.....	25	24	6	
Total United States.....	353	425	71	57

75379°-26†-7



**PUBLICATIONS OF THE UNITED STATES DEPARTMENT OF AGRICULTURE RELATING TO PEANUTS AND PEANUT PRODUCTS**

- BAILEY, H. S., and J. A. LE CLERC.  
 1918. The peanut, a great American food. *In* U. S. Dept. Agr. Yearbook 1917, pp. 289-301, illus. (Yearbook separate 746.)
- and B. E. REUTER.  
 1919. The production and conservation of fats and oils in the United States. U. S. Dept. Agr. Bul. 769, 45 pp. (Supplement, 1919.)
- BEATTIE, W. R.  
 1911. The picking and handling of peanuts. U. S. Dept. Agr., Bur. Plant Indus. Circ. 88, 7 pp.  
 1912. Peanut butter. U. S. Dept. Agr., Bur. Plant Indus. Circ. 98, 14 pp., illus.  
 1912. Syllabus of illustrated lecture on the peanut: Its culture and uses. U. S. Dept. Agr., Office Exp. Sta. Farmers' Inst. Lecture 13, 23 pp.  
 1920. Peanut growing for profit. U. S. Dept. Agr. Farmers' Bul. 1127, 33 pp., illus.
- POPENOE, C. H.  
 1911. The Indian-meal moth and "weevil-cut" peanuts. U. S. Dept. Agr., Bur. Ent. Circ. 142, 6 pp., illus.
- REED, J. B.  
 1922. By-products from crushing peanuts. U. S. Dept. Agr. Bul. 1096, 12 pp., illus.
- ROMMEL, G. M., and W. F. HAMMOND.  
 1911. A note on the feeding value of coconut and peanut meals for horses. U. S. Dept. Agr., Bur. Anim. Indus. Circ. 168, 2 pp.
- THOMPSON, H. C.  
 1917. Harvesting, picking, thrashing, and storing peanuts. U. S. Dept. Agr., Office Sec. Circ. 81, 6 pp., illus.  
 1918. Present status of the peanut industry. *In* U. S. Dept. Agr. Yearbook 1917, pp. 113-126 illus. (Yearbook separate 748.)  
 1920. The manufacture and use of peanut butter. U. S. Dept. Agr. Circ. 128, 16 pp., illus.
- and H. S. BAILEY.  
 1920. Peanut oil. U. S. Dept. Agr. Farmers' Bul. 751, 18 pp. (Revised.)

**ORGANIZATION OF THE  
UNITED STATES DEPARTMENT OF AGRICULTURE**

April 15, 1926

---

<i>Secretary of Agriculture</i> -----	W. M. JARDINE.
<i>Assistant Secretary</i> -----	R. W. DUNLAP.
<i>Director of Scientific Work</i> -----	-----
<i>Director of Regulatory Work</i> -----	WALTER G. CAMPBELL.
<i>Director of Extension Work</i> -----	C. W. WARBURTON.
<i>Director of Information</i> -----	NELSON ANTRIM CRAWFORD.
<i>Director of Personnel and Business Administration</i> -----	W. W. STOCKBERGER.
<i>Solicitor</i> -----	R. W. WILLIAMS.
<i>Weather Bureau</i> -----	CHARLES F. MARVIN, <i>Chief</i> .
<i>Bureau of Agricultural Economics</i> -----	THOMAS P. COOPER, <i>Chief</i> .
<i>Bureau of Animal Industry</i> -----	JOHN R. MOHLER, <i>Chief</i> .
<i>Bureau of Plant Industry</i> -----	WILLIAM A. TAYLOR, <i>Chief</i> .
<i>Forest Service</i> -----	W. B. GREELEY, <i>Chief</i> .
<i>Bureau of Chemistry</i> -----	C. A. BROWNE, <i>Chief</i> .
<i>Bureau of Soils</i> -----	MILTON WHITNEY, <i>Chief</i> .
<i>Bureau of Entomology</i> -----	L. O. HOWARD, <i>Chief</i> .
<i>Bureau of Biological Survey</i> -----	E. W. NELSON, <i>Chief</i> .
<i>Bureau of Public Roads</i> -----	THOMAS H. MACDONALD, <i>Chief</i> .
<i>Bureau of Home Economics</i> -----	LOUISE STANLEY, <i>Chief</i> .
<i>Bureau of Dairying</i> -----	C. W. LARSON, <i>Chief</i> .
<i>Fixed Nitrogen Research Laboratory</i> -----	F. G. COTTRELL, <i>Director</i> .
<i>Office of Experiment Stations</i> -----	E. W. ALLEN, <i>Chief</i> .
<i>Office of Cooperative Extension Work</i> -----	C. B. SMITH, <i>Chief</i> .
<i>Library</i> -----	CLARIBEL R. BARNETT, <i>Librarian</i> .
<i>Federal Horticultural Board</i> -----	C. L. MARLATT, <i>Chairman</i> .
<i>Insecticide and Fungicide Board</i> -----	J. K. HAYWOOD, <i>Chairman</i> .
<i>Packers and Stockyards Administration</i> -----	JOHN T. CAINE, <i>in Charge</i> .
<i>Grain Futures Administration</i> -----	J. W. T. DUVEL, <i>in Charge</i> .

This bulletin is a contribution from

<i>Bureau of Agricultural Economics</i> -----	THOMAS P. COOPER, <i>Chief</i> .
<i>Division of Fruits and Vegetables</i> -----	WELLS A. SHERMAN, <i>in Charge</i> .

99

---

ADDITIONAL COPIES  
OF THIS PUBLICATION MAY BE PROCURED FROM  
THE SUPERINTENDENT OF DOCUMENTS  
GOVERNMENT PRINTING OFFICE  
WASHINGTON, D. C.

AT  
25 CENTS PER COPY





